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The Essex agricultural party and Hungarian conductors.

From a photograph by Maurice Erdélyi, Budapest.

AGRICULTURAL INDUSTRY AND EDUCATION IN HUNGARY,

Being an Account of the Visit of the Essex Farmers'
Party to Hungary in May and June, 1902.

Compiled by T. S. Dymond,

From Notes by Members of the Party and from Official Information supplied,

With Ninety-eight Illustrations,

From Photographs taken during the Journey.

CHELMSFORD :
COUNTY TECHNICAL LABORATORIES,
October, 1902.

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In relays and courses,
At rude cabins given,
We galloped, like wild horses,
Till the cool fresh even,
And we saw two things all day,—the green plain and heaven!

Once we saw the rolling
Of the Danube nigh,
Once we heard the tolling
Of churchbells wafted by,
But otherwise we were as wild birds in the sky.

But towards night less dreary
Was the grassy way,
And we passed, unweary,
Villages that lay,
Oases, in a belt of light acacia.

From "*The Plains of Hungary,*"
by F. W. Faber.

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PREFACE.

As Chairman of the Essex Agricultural Party that visited Hungary last May and June, I desire to express our grateful appreciation of the generous hospitality we received in that country. Our reception by the Minister of Agriculture, by the National Agricultural Society, by municipalities, by local agricultural organizations, and by individual agriculturists of all ranks far exceeded our utmost expectations and left a profound impression on our minds of the friendship felt by the Hungarian for the English nation, which we, as individual Englishmen who experienced their kindness, most heartily reciprocate.

From a farmer's point of view the tour proved most instructive and interesting. The good farming and abundant grain and forage crops, the breeding of excellent horses and cattle, the former especially in amazing numbers, the production of pure, wholesome wines and tobacco, the organization of agricultural industries, and, lastly, the complete measures taken by the State to foster in every way all agricultural developments and improvements (especially in their well-managed stud farms and in their agricultural and horticultural colleges and schools), led us to believe in a great future for a country of such splendid agricultural resources and remarkable enterprise, and impressed us with the advantage of close commercial intercourse between the two countries.

EDWARD A. FITCH.

Maldon, Essex.

THE PARTY.

E. A. Fitch, * § ..	F.L.S., County Alderman, member of the Essex Technical Inst. Committee (chairman of party).
R. Balls, * § ..	Essex farmer and land agent.
A. F. Barnard, * § ..	Essex farmer.
W. S. Barrett, § ..	Oxfordshire farmer.
G. Baynes, * § ..	Essex farmer.
T. Bradridge, * § ..	Essex farmer and corn merchant.
E. H. Brewster,* § ..	Essex farmer.
C. N. Brooks, * † § ..	County Councillor, member of the Essex Technical Instruction Committee, farmer and maltster.
J. H. Burrows, * § ..	County Councillor, member of the Essex Technical Instruction Committee.
C. H. Chisnall, * § ..	Essex farmer.
F. W. Clarke, * § ..	Essex and Surrey farmer.
J. Cowx, * § ..	Chairman of the Liverpool District Farmers' Club, farmer and shipping agent.
D. Crawford, * § ..	Hertfordshire farmer.
S. W. Crawley, § ..	Essex farmer.
R. F. Cross, * § ..	Essex farmer.
B. C. Custerson,* § ..	Essex farmer.
R. W. Dannatt, § ..	Essex farmer.
J. F. W. Dobson, * § ..	Essex farmer.
J. G. Eve, * § ..	Essex farmer.
R. H. Eve, § ..	Essex farmer, hay and corn merchant.
J. Garrad, * § ..	Essex farmer, maltster and miller.
T. W. Goodchild, § ..	Essex farmer.
W. Hasler, * † § ..	Essex farmer and seed merchant.
H. W. Hoskin, * § ..	Essex farmer.
D. Houston, * † § ..	F.L.S., Lecturer on agricultural botany in the Royal College of Science, Dublin, representing the Irish Department of Agriculture.
R. C. Hunter, * § ..	Essex farmer.
J. Hurst, † § ..	Essex farmer.
G. Jackson, * § ..	County Councillor, member of the Essex Technical Instruction Committee.
A. Keen, * § ..	Secretary of the Cambridgeshire Technical Instruction Committee, chairman of the Association of Organizing Secretaries for Technical Instruction.
W. Macandrew, * § ..	J.P., Essex landowner.
R. Marriage, * § ..	Essex farmer.
S. P. Marriage, * § ..	Essex farmer, miller and corn merchant.
J. H. Nicholas, * § ..	Secretary of the Essex Technical Inst. Committee.
J. Page, * § ..	Essex farmer.
J. Pimbley, * § ..	Lancashire farmer.
C. B. Russell, * § ..	J.P., County Alderman, member of the Essex Technical Instruction Committee.
T. J. Slater, * § ..	Northamptonshire farmer and corn merchant.
J. Smith, * § ..	County Councillor, Essex farmer and seed grower.
J. Speir, * § ..	Scotch farmer.
H. D. Squier, * § ..	Essex farmer.
S. Steel, § ..	Essex farmer.
H. Stopes, * § ..	Chairman of the Barley Committee of the Brewers' Exhibition.
E. Tingey, * § ..	Norfolk farmer.
H. Turner, * § ..	Essex farmer.
F. A. Vaizey, * § ..	Essex farmer.
A. E. Winmill, § ..	Essex farmer.
T. S. Dymond, † § ..	Lecturer in agricult. chemistry in the Essex County Laboratories (English conductor of the party).

* Contributors. † Photographers. § Subscribers.

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INTRODUCTION.

GENERAL DESCRIPTION OF AGRICULTURE IN HUNGARY.

From a pamphlet edited by the Royal Hungarian Minister of Agriculture.

I. CLIMATE, SOIL, POPULATION.

The climate of Hungary divides itself into two extremes, that of the wild mountain districts and that of the Plains. The wild mountain climate prevails in the Northern and Eastern Carpathians, becoming gradually milder towards the south-eastern plateau. Great extremes, however, are never met with as the moderate height of the various chains shows in general no great deviation. The climate of the plains prevails in the Great and the Small Plain, in the valley of the Mura, Dráva and Száva, where the temperature and the rainfall show a much greater variation.

Fiume, situated in one corner of the country, has a sea-side climate; the temperature is tolerably uniform, the rainfall according to the seasons is very changeable. The Carpathian chain is favourable to the climate of the country in keeping back the cold north winds and turning towards the interior of the country the hotter currents coming from the south.

The average temperature of Hungary, with the exception of the higher lying districts, is in general higher than that of other countries of the Continent in the same latitude. Four-fifths of the soil produce maize and grapes. Only on the north-western and eastern chain of mountains does the pine tree grow. The average temperature of the different districts ranges between 42° and 58° Fahr.; the average monthly temperature in January falls to 40° and 42°. In the different districts according to the seasons the following is the variation of the temperature:—in spring, 42° and 55°; in summer, 60° and 74°; in autumn, 44° and 59°; and in winter, 40·5° and 43° Fahr.

The fluctuations of the temperature are of more significance in the Great Plains than in the mountain districts and of more importance in winter than in summer. The most critical month is May when frost and rime often cause great damage. The summer in the Plains is long and excessively hot; the winter, which is often very wild, lasts from 4 to 30 days longer in the mountain districts. Autumn is the most equable season.

From the end of April till the end of September south and south-west warm humid winds blow, from October till April dry north-east winds. It is reckoned that on an average there are in the mountain districts 22, and in the Plains 13 stormy days.

The rainfall is very variable in the different districts, and especially in the Plains there are great extremes changing from drought to flood. The yearly rainfall varies between 20 and 60 inches; the middle part of Transylvania is especially dry. On the Great and Little Plain the rainfall varies between 20 and 28 inches; on the borders of Transylvania, in Upper Hungary and in the district between the Danube and the Dráva between 24 and 35; in the north-eastern mountain districts and in Fiume between 40 and 60 inches. On an average in mountain districts 114, in the Plains 101 rainy days are reckoned. November is the most rainy month; in January, February and September the least rain falls.

The extremes of climate destroy such men, animals and plants as cannot become accustomed to them; therefore, in Hungary, only those organisms can thrive which have some power of resistance, few requirements, and which are fitted to struggle.

The soil itself is very varied. In the mountain districts the crumbling of the primitive granite and gneiss rock has formed a stiff soil and from this has sprung the productive sub-soil of the woods and Alpine pastures. In Upper Hungary, in general, the soil is light loam and in some places also peaty. The soil of the Transylvanian plateau is more hardy, fertile and fitter for meadow ground; in the interior dark, rich soil prevails. On the trachyte and tuff hillchains of the tertian age very good loam soil has formed which is of especial importance in viticulture. For instance the celebrated wines Tokaj, Mátra, Badacsony, Somlyó, Pozsony, Versecz and Arad are produced on the soil made by the crumbling of the rock and volcanic formations.

The rocks of volcanic formation have an influence on the surrounding districts, and the settling of the mud washed down from them has fertilized in a large measure the soil lying under them; the limey and phosphatic mud of the rivers always enriches the land in their basins. The continual separation of this fertilizing mud from the mountains and its settling down in districts on a lower level explains the fact, that in parts of the country made productive by it the soil is never exhausted; even tired out soil wins back its fertility without artificial help merely by being left fallow.

The whole of the Great Plain and the northern part of the Little Plain is covered by a very productive loamy stratum; a part of Csallóköz and Mosony is sandy, slimy and gravelly, the Rába valley is sandy. In other parts of the Plains marl prevails in which in some places loam is the predominant factor, in others chalk; this naturally changes and alters the character of the alluvial soil. In the Great Plain, between the Danube and the Tisza as far as Szabadka, sand prevails, and in this district there is every variation of sandy soil, from quicksand to the black sand mixed and bound with fertile soil.

In the north-eastern part of the Plains, in the Nyirség, the soil is a very Sahara and not very fertile. Such sandy soil is to be found in Deliblát (south-west). But since the ravages of the phylloxera, these lands have more value, being convenient for the planting and production of the resistant vine stocks.

On both banks of the Danube, down as far as the county Krassó-Szörény, in the upper basin of the Tisza, and especially along the lower Tisza in the counties of Békés, Csanád, Temes, Torontál and Bács, the alluvial soil is very productive, its fertility being inexhaustible. Here and there (Vácz, Kőbánya, Nagyvárad) gravelly soil is also to be found, and in the counties of Bihar and Szabolcs, saltpetre; between the Danube and the Tisza and on the Hortobágy estate saltpetre islands are also to be found.

The Geological Institute in Budapest is at present engaging itself with the scientific investigation of the whole area of the country.

The rivers have often played a fatal rôle in agriculture, having many times overflowed and destroyed the most productive districts. But since 1834 pains have been continually taken to avoid such disasters, and to make use of the rivers in the interest of agriculture. This work of defence against inundation has for the greatest part been undertaken by the landowners themselves who unite for this purpose into regulating societies.

The number of these societies in the valley of the Danube is 28 (territory 2,675.000 acres, length of dam 1,405 miles), of the Theiss 42 (territory 5,194,000 acres, length of dam 2,016 miles). Besides this there is much private and communal provision against inundation. There are still at the most 370,000 to 445,000 acres to be protected from flooding. Until now nearly £7,000,000 have been spent in the co-operating work for defence against inundation, and about £1,700,000 will still be necessary. Since 1867 more than £8,000,000 have been spent by the State on river regulation and £1,000,000 in the keeping up of repairs; £4,250,000 have been voted by the legislature for river regulation to be completed by 1907. It is no exaggeration to say that through the work of water regulation the value of the land has increased by £40,000,000.

Great results have also been effected by the application of the rivers in the service of agriculture. With this aim in 1879 was founded the Land Engineers' Institute, which has already done important service in the reclamation of the soil: in drainage by ditches—906,500 acres, in drainage by pipes—29,900 acres, and in irrigation—28,900 acres. The increase of the value of the reclaimed areas exceeds £4,000,000, and the sum spent on reclamation a little more than £1,250,000. At present great endeavours are being made for the extension of irrigation especially on the good soil of the Plains, so that, in the absence of rain, gardening and the production of forage may be made possible.

It will not perhaps be without interest to take in turn the peculiarities of the different races living in Hungary, so that an idea of their ability for agriculture can be formed.

The Hungarian of the Plains is hasty and of a sanguine temperament, he possesses great bodily strength, in work is smart and industrious, but not liking it in detail. In consequence of the uniformity of the climate the work of sowing and reaping takes place in the whole of the Plains at the same time so that sometimes there are not labourers enough. At such a time, especially during the harvest, the Hungarian peasant really works wonders ; he is content with 2 or 3 hours sleep a day. The Hungarians without exception have a particular predilection for the tilling of the land and for the breeding of farm stock, they understand too something of industry, but have no great inclination for commerce. The Székelys of Transylvania are better adapted for commerce.

The Germans, who in the course of centuries have immigrated into the country and live in greater masses on the western frontier, in the Bánság, in Transylvania and Upper Hungary, are industrious and thrifty people, who have founded many towns and industries as well. But already in Upper Hungary and in Transylvania they are in retrogression.

The Slavs in great numbers inhabit the northern and north-eastern counties, in the south being more scattered. A large number of these also have immigrated; they are slow but industrious and assiduous, and the lowest class of them very fitted for rough work, poor and great whiskey drinkers. Cattle breeding is a popular occupation with them. They are smart enough too in home industry. In the summer they travel through the Plains doing harvest work. Amongst the southern Slavs the old patriarchal family community is here and there in vogue.

The Roumanians since the XIIth century have been immigrating from the Balkan peninsula and have settled down in the eastern districts. They are industrious, thrifty, unpretentious, very religious, clinging to their language and customs, and very mistrustful of strangers, with not much inclination for improvement or development. Cattle breeding and tillage are favourite occupations with them. Many lead a nomadic life.

II. AGRICULTURE.

In the kingdom of Hungary 76,058,384 acres are under cultivation. The area of the uncultivated land (rivers, roads, railways, barren land,

&c.) is 3,804,669 acres. Before the commencement of the water regulation the extent of the districts not under cultivation was much greater.

The land under cultivation may be divided as follows :—

Arable land ...	33,372,106	acres	43·88%
Garden	1,064,407	,,	1·40%
Meadow land ...	8,175,339	,,	10·75%
Vineyards	651,996	,,	0·86%
Pasture land ...	10,388,435	,,	13·66%
Forest	22,198,493	,,	29·18%
Reed plots... ...	207,608	,,	0·27%
Altogether	76,058,384	acres	100%

According to this ploughland occupies 43% of the whole land under cultivation. Of the Plains 70% is plough land, in hilly districts 40—50%, in the northern, eastern and south-eastern mountain districts 30%. For the last 50 years the extent of plough land has been increasing. This increase is to be noticed more in the Plains, where the plough land takes the place of the pasture ground.

The vineyards of Hungary have considerably decreased since the 'eighties. Twenty-five years ago the area of the vineyards of Hungary extended to 1,075,480 acres, but since the ravages of the phylloxera their number has decreased in ten years by 43·64%. In 1895 the area of the vineyards had reached the minimum and since that time it has been continually increasing. In consequence of the united endeavours of the State and the viticulturist in 1901, there were already 651,996 acres of vineyards.

From year to year a greater extent of plough land is sown. Thirty years ago the fallow land was 20% of the arable land, now the proportion has gone down to 10·73%. The proportion of sown and fallow land in the several districts is very variable. In the Great Plain fallow land is very rare ; in the county Torontál 1%, in Arad and Csanád 2% ; in the mountain districts a great area still remains fallow, for instance in the county of Csik one half. The average yield per acre is also steadily increasing, particularly of the corn crops ; the cause of the improvement being a better choice of seeds and the more rational method of management.

Since such extensive measures have been taken for water regulation, the damage done by the elements to the whole crops of the country is of no great importance. In some districts, however, damage is done by ice and hail, in a smaller degree by drought and plant diseases. Reckoning all the damage done in 1901 by the elements, along with that done by mice and injurious insects, it is found that nearly 500,000 acres of the produce were destroyed.

The principal products of the arable land are as follows:—

	Acres.	% of the area.
Corn crops	17,853,889	59·93
Legumens	112,148	0·38
Roots and green crops ...	8,620,070	28·93
Commercial plants ...	406,115	1·36
Forage crops	2,574,355	8·64
Garden crops	225,881	0·76
Altogether ...	29,792,458	100%

More than half of the land under crop is sown by cereals, wheat taking the first place. The territory under wheat is to-day also, though slowly, growing in extent. The area under roots, green and forage crops is also on the increase, and, as the meadows too are being extended, all this demonstrates the improvement of stock breeding and of domestic economy.

(a) *Cereals.*

Not only as regards the extent of the arable land but also in the value of the yield cereals take the first place in the agriculture of Hungary. Amongst these the most popular and important is the world-renowned wheat, which is the principal product of Hungarian agriculture. Half of the land sown with cereals produces wheat, which forms 30% of the whole yield. In the best wheat-growing counties of Temes, Torontál, Borsod, Heves, Nógrád, Szolnok, Csongrád and Bács-Bodrogh the half of the arable land is sown with wheat, while in the northern counties of Szepes, Liptó and Árva wheat forms hardly 1% of the grain crop, but in other hilly districts 27—28% of the arable land is sown with wheat.

The wheat crop on an average in the 'eighties over an area of 7½ million acres was 15,800,000 quarters, in the 'nineties over 8⅝ million acres 17,500,000 quarters. The average crop per acre was 17¾ bushels (81 stones), varying between 4 and 22 bushels per district. The average weight of wheat per bushel is 62½—63¼ lbs., on more productive ground 64—65½ lbs.; in consequence of the more careful choice of seed this weight is constantly increasing. For some years the farmers have been provided by the State with good seed, this being produced on the State farms.

Hungarian wheat, having such splendid qualities, being so hard and the husk coming off so easily, yields consequently the finest and best flour. Its chemical composition is also very favourable, there is much gluten, starch and diastase in it, and in consequence the Hungarian flour is more suited than any other for the preparation of finer confectionery, and so in spite of great import duties Hungarian flour has never been excluded from foreign markets.

The greatest part of the Hungarian wheat is consumed in the country itself, but 78,000,000 stones of wheat are exported and the flour of 125,000,000 stones. The value of the export exceeds more than £10,000,000. Amongst foreign countries the greatest consumer is Austria, which imports yearly almost 94,000,000 stones of flour and 78,000,000 stones of wheat. Germany imports about 630,000, Switzerland 314,000 and Italy 471,000 stones of wheat from Hungary. The greatest export of flour is to Great Britain,—nearly 8,000,000 stones, to Germany 2,700,000 stones, to France 1,600,000 stones and to Brazil 1,600,000 stones.

The milling industry of Hungary has reached an extraordinary state of development and completeness. The milling industry of Budapest possesses such a capacity for work, that no other town in Europe can be compared with it and in America it is only outdone by Minneapolis. The ten mills of Budapest have a grinding power of 440,000 stones of wheat every 24 hours, that is to say, in a year, of 165,000,000 stones. On an average 110,000,000 to 126,000,000 stones of wheat flour and 24,000,000 to 31,000,000 stones of bran are produced yearly in Budapest; nearly 100,000 tons of coal and £150,000 worth of other articles are consumed in this industry. The mills are worked by machinery in such a perfect manner, that only 3,000 hands are employed.

The acreage under rye is 9% of the whole arable land and is on the decrease, its place being rather taken up by wheat, as was prophesied by Lavergne 50 years ago. The yield in the 'eighties on 2,720,000 acres was 5,400,000 qrs.; since 1890 it has increased to 6,300,000 qrs. Most rye is grown in the sandy soil of the counties of Pest, Szabolcs, Zala and Vas. The average yield per acre is increasing, as is also the weight per bushel. The average weight of the winter-rye is 57 to 57¾ lbs., of the summer-rye 55¼ to 56 lbs. The so-called mountain-rye has become well acclimatised in Hungary, improving the quality of the crop. The exported rye (1,000,000 qrs. to the value of £1,300,000) finds a market in Austria.

Barley is produced on an acreage of 2,720,000 acres; the yield, which was in the 'eighties 5,000,000 qrs., has increased to 6,500,000 qrs. In the north-western counties, where the best barley grows, one-fourth of the acreage is under barley suitable for brewing. The quality is constantly improving; the weight per bushel 50½lbs. to 52lbs.

The barley export is 1,500,000 qrs. to 2,000,000 qrs, to a value of £1,700,000 to £2,500,000. The half of this is sent to Germany. Bavaria imports much, but in England and Holland also the Hungarian barley finds a good market. Besides this, Hungary exports 3,000,000 to 4,000,000 stones of malt (value £170,000 to £250,000) and 1,600,000 stones of pearl barley.

Ten per cent. of the acreage under crop is sown with oats, in the northern counties 25 to 58%, in the Plains hardly 4 to 5%. Altogether the acreage under oats is diminishing, the yield is on the contrary increasing. On 2,720,000 acres 8,000,000 qrs. of oats are grown. The average weight per bushel exceeds 35lbs. The export is 1,500,000 qrs. to a value of £1,000,000.

The production of rice is being extended in the south, since the experiments tried in Pékla State Farm have led to success. At present it is produced on 1,200 acres, and as regards quality it can vie with the best Italian or Carolinian rice.

(b) *Roots and Green Crops.*

Next to wheat, the most important product of Hungary is maize. A great part is used for food, for distillation and for the fattening of pigs. The crop is a sure one, giving work to women and children. By means of allotments the poor workman is able to provide himself with maize for the winter and to feed some pigs without any expense. The acreage under maize has risen between 1880 and 1900 from 5,400,000 acres to 6,400,000. The yield is 14,000,000 qrs. with a value of £2,500,000.

After the United States of America, Hungary is the greatest maize-producing state, but in America and in Australia the average yield per acre is greater. The acreage under maize in some counties of Transylvania is 40 to 48% of the whole arable land, 26% in the Plains, 12% between the Danube and Dráva, 7% in the northern and 5% in the western counties.

The greatest part of the crop is consumed in the country itself, but something remains also for export, an average of 30,000,000 stones yearly to the value of £1,000,000. The greatest purchaser is Austria, then come Germany, Italy and Switzerland. One advantage of the Hungarian maize is that it appears some months earlier than the American, which can of course be sent on the long sea journey only in a very dry state.

The potato plays a great part in the daily food of the inhabitants of the north of Hungary, 1,500,000 tons are consumed yearly on an average in Hungary; it is also used as forage, in distillation and in starch factories. Between 1880 and 1900 the area of potato fields increased from 1,180,000 to 1,480,000 acres, and the crop from 106,000,000 bushels to 135,000,000 bushels. In the northern counties 20 to 30% of the arable land is planted with potatoes, in the Plains and in Transylvania hardly 2%. It is worthy of note that in consequence of the more careful cultivation of the potato, its quality is constantly improving.

The production of forage and sugar-beet shows the greatest increase. The area under forage beet from 1880 to 1900 rose from 250,000 to 400,000 acres, and the crop from 2,000,000 to 3,000,000 tons. The acreage under sugar-beet in the same years rose from 100,000 to 230,000 acres and the crop from 700,000 tons to 2,000,000. If we go back 30 years, we find that the acreage has increased fivefold and the crop tenfold. This astonishing result is connected with the development of the sugar manufacture and the impulse given to cattle breeding.

(c) *Commercial Plants.*

Rape seed, which was once a very favoured product of Hungarian farming, is to-day not so much in demand, partly because prices have gone down and partly because the crop is an uncertain one. Its production is very fluctuating. In 1900, 3,000,000 stones of rape seed grew on an area of 90,000 acres.

The production of tobacco in Hungary is licensed by the State. In many districts the conditions of soil and climate are favourable to the production of the finer sorts of tobacco. The yield fluctuates. Between the years of 1870 and 1880 on an area of 160,000 acres there was a yield of 710lbs. per acre; between 1880 and 1890 on 140,000 acres 900lbs. per acre; and finally between 1890 and 1900, 1,250lbs. per acre on an acreage of 100,000 acres. The area is diminishing, but the average crop per acre is on the increase, as the farmers prefer rather the large leaf varieties.

Tobacco is a favourite product with the farmers because it gives on an average a raw income of about £7 per acre and keeps many hands employed through the whole year. Hungary exports yearly 20,000 to 23,000 tons of tobacco to a value of £330,000 to £420,000. The best purchasers are: the Austrian tobacco-monopoly, Holland, Germany, Italy and the islands of the Mediterranean. The production of tobacco in Hungary is capable of a much higher development, only markets are wanting.

The production of flax and hemp has taken an impulse only of late years. The area under flax is 39,500 acres (the yield 10,000 tons of fibre and 800,000 stones of seed) for the most part in the county of Szepes. The area under hemp is 170,000 acres (the yield 47,000 tons of fibre and 4,400,000 stones of seeds), mostly in the county of Bács-Bodrogh. Flax is manufactured in the country itself; a part of the hemp is exported, yearly 6,000 tons to the value of £188,000.

Hungary, especially a part of Transylvania, has many districts very suitable for the production of hops. There are fields where the hop production gives a net profit of £7 to £10 per acre. In the valleys of Küküllö and Maros, where hops were introduced 30 years ago, the crop is a flourishing one, the best quality growing here. The yield is about 200 tons of which 150 tons are exported to Austria and to the Balkan peninsula. But the production, although it is gradually but slowly increasing, is not great enough to meet the exigencies of internal consumption. For hop planting special technical knowledge and, at the beginning, a large investment of capital is required; this hinders its further extension. The government is endeavouring to forward the sale of hops by encouraging the public market for them in Segesvár.

III. FORAGE CROPS.

The native meadows of Hungary (5,000,000 acres) and the hay crop (on an average 17½ cwt. per acre) have but little changed of late years. But owing to the greater development of cattle breeding the method of soiling has also had to be resorted to. Within the last 30 years the area of the soiling crops has risen from 500,000 acres to 1,500,000 acres, the greatest part of which is sown with clover. The clover crop can be estimated at 2,000,000 tons. The native meadows now form about 10%, and soiling crops 4 to 5% of the land under cultivation, from which the conclusion may be drawn, that the cereals still play a principal part in the agriculture of Hungary. Soiling crops are of greatest extent in those districts where the native meadows are few.

The area of the pasturage is constantly diminishing. The commons have in many places been cut up into private property and put under the plough. A part is occupied by soiling and other crops, and a part by vine stocks.

Exhausted lands are used for pasturage, as well as 20 to 25% of the woods.

The extent of the pasturage forms from 3·5% (in county Háromszék) to 30% (in county Hajdú) of the whole land under cultivation. In the Carpathian mountains there are permanent pasturages to the extent of 1,638,000 acres, which vie with those of Switzerland and Austria. Little use is, however, made of them. There is no doubt whatever that they will have a great influence on the improvement of cattle breeds.

The whole extent of the forage crops, including beet and potato fields, is about 17,000,000 acres and so hardly ⅓ part of the land under cultivation is in use for stock breeding. The recognition of the profitableness of intensive farming and the necessity of increasing the fertility of the soil lead the farmers to plant larger and larger territories with forage crops. The fall in the corn prices was also a motive to this endeavour which assures a safer ground for Hungarian agriculture in future.

IV. HORTICULTURE.

The produce of Hungarian gardening consists of fruit, vegetables and flowers. Fruit, kitchen and flower gardens covered in 1885 an extent of 495,000 acres, to-day the area is more than double this amount, namely, 1,065,000 acres. This is owing to the greater consumption in the towns and to the reclamation of the soil, by which the value of gardening is greatly enhanced. For instance along the rivers Kőrös and Berettyó, the whole garden area in 1885 was only 740 acres, in 1895 this had increased to 17,500 acres. Near the towns of Makó, Nagykőrös and Kecskemét the garden area has increased by 50% in the last 10 years. Makó exports for the most part onions, Nagykörös and Kecskemét fruit, especially Kecskemét, which exports for weeks at a time waggonloads of apricots and agriots, special trains being required for carriage.

Orchards occupy one half of the garden area, kitchen gardens one fourth and flower gardens one fourth. The flower gardens are multiplying mostly in the vicinity of Budapest and of the large suburban towns where villas are constantly being erected.

Hungarian horticulture still suffers from the want of capital and of efficient gardeners.

The importance of the orchards, although some of them are some centuries old, has only lately begun to be recognized. Every year a million fruit trees are planted. The greatest part of the nursery gardens are kept up by the State and by communities, but besides these there are many private and co-operative nursery gardens. The State possesses 36 nurseries with an area of 940 acres producing every year 7.000.000 shoots and 500.000 grafted stocks. Communities and schools have altogether 9,000 nurseries on an area of 15,000 acres. The extent of private nurseries is 500 acres; the owners of eight of these sell the produce of their nurseries.

A few years ago the State began the planting of fruit trees on both sides of the high roads. A length of 5,600 miles with 800,000 grafted stocks is planted. Of those already planted 95% have taken root. Short courses of lectures are held for the road surveyors, to teach them the treatment of the grafts and trees.

Short courses are also held by the State for teachers in elementary schools to enable them to give instruction in fruit cultivation. There are also theoretical and practical courses for under gardeners.

With the exception of a few wild mountain districts and barren land the whole country is well suited to the production of fruit. The apple and pear thrive throughout the whole country, palms in the north and south, apricots and peaches in vine-growing districts, cherries in the hills, agriots and walnuts in the south and middle.

Amateurs do not restrict themselves to a few tree specimens, they are fond of evolving new varieties. The consequence is, that the crop has not a constant and uniform character. In order, therefore, to produce a good article of commerce only few specimens, those most suited to the soil and climate, have of recent years been propagated in the various nurseries in each district.

The Government endeavours to encourage the turning into account of fruit, which cannot be sold, by establishing drying kilns, wine-presses and distilleries. Not counting plums, of which many are imported from Servia and Bosnia, Hungary exports yearly £170,000 worth of fresh fruit, £8,000 worth of dried fruit and £25,000 worth of walnuts and hazelnuts. But in consequence of the continuous planting of new orchards this export will assume still greater proportions.

The products of the kitchen gardens, although smaller in area, are greater than those of the orchards. Almost every country house has its kitchen garden, where, however, as a rule only the commoner vegetables are produced. Market gardeners grow all kinds of vegetables for the neighbouring towns and in some districts for export also.

The counties of Pest, Pozsony, Fehér and the district of Csallóköz export much cabbage; Győr, Fehér and Csallóköz parsley and beetroot, the towns of Debreczen, Kassa, Pozsony and Kóka radishes and horse-radish, Szeged, Kalocsa and Fajsz paprika. Nagy-Kőrös and Makó are world-renowned markets for cucumber and onions; the tenants in that district pay £3 to £7 yearly per acre for their allotments.

The preserving of fruit and vegetables is practised widely in the country; in recent years several factories have been built for this purpose.

Fifteen hundred hothouses and almost every nursery cultivate flowers and other decorative plants, but the demand is still greater than the supply. In this there is a great future awaiting nursery gardeners in Hungary.

V. VITICULTURE.

The area of the vineyards of Hungary in the 'eighties, before the ravages of the phylloxera had become so great, amounted to 884,000 acres, from which every year 110,000,000 to 130,000,000 gallons of wine were made. The greater part of the vineyards were planted on mountain sides facing the south, but in the sandy soil of the Plains also, the cultivation of the vine had fairly well taken root, the area under plantation being 125,000 acres. The latter grape gives a light, agreeable, sourish, aromatic wine which is used particularly for home consumption. The mountain grapes give a heavy, fiery wine of which some, viz., Tokaj, Eger, Sashegy, Neszmély, Somlyó, Érmellék, Magyarád, Erdély, etc., are articles of world-wide renown.

The phylloxera blight appeared in Hungary in the year 1875 and caused the greatest devastations in the 'eighties, over two-thirds of the vineyard area. The very rapid extension of the phylloxera blight caused the vinegrowers to have new vineyards planted on the extensive sandy districts of the Plains. By the State itself 300 acres of model vineyards on sand were reserved in Kecskemét for the purposes of viticultural experiments, and especially with the aim of preserving the different kinds of good old house-grape threatened by the phylloxera. In connection with these is a School of Viticulture. In reference to the experiments carried out on the Kecskemét settlement and to the results shown there, it is to be seen that in two decenniums 100,000 acres of new vineyards have come into existence on barren sandy wastes. By the rational choice of grape species and the proper treatment of the sand vineyards the quality of the wines produced on sandy soil has considerably improved, and these have become in wide circles a recognised and sought-after article of consumption.

The reform of the mountain vineyards has made still greater progress. The restoration of these is partly brought about by the treatment of the native grape vines with bisulphide of carbon, but mostly by the use of American grafts. Until now altogether 161,000 acres of damaged vineyards have been reclaimed, of which 37,000 acres are planted with native vine stocks for treatment with bisulphide of carbon, and 125,000 acres with American vine stocks for grafting.

The greater part of the mountain vineyards were reclaimed in quite recent years, the State having taken special measures to encourage their restoration. According to Act V. 1896, the vine growers can get the loan of money under favourable conditions on the guarantee of the State for the reclamation of their vineyards. The vine grower making use of this loan is bound to complete the work of restoration under the supervision and control of experts employed by the State.

To provide the vine-growers with American grape vines and grafted stocks at a cheap rate, the State has brought into existence 46 nurseries with an extent of 2,500 acres distributed through the whole country. When their power of production is fully developed, these nurseries will produce 50,000,000 vine branches yearly. The State forests also produce yearly 1,000,000 to 2,000,000 vine stocks and these are sold at a moderate rate.

The treatment of the grapes by American vine stocks being as yet unknown to the people, practical training is given on this subject in all the State nurseries through the whole year to vine planters and workmen. Besides this, periodical instruction is given to teachers and growers. There are also permanent viticultural schools.

For the purpose of scientific research into every question relating to viticulture an Ampelological Institute has lately been founded in Budapest.

As a result of all these measures the restoration of the old vineyards is taking quick steps and in consequence of a careful selection and treatment of the grape species, the wines of to-day cannot only vie with but far surpass, the old world-renowned Hungarian wines.

VI. SYLVICULTURE.

There are 22,000,000 acres of forests in Hungary; of these, 3,700,000 acres belong to the State, 8,650,000 acres to other corporations. The Agricultural Ministry is entrusted with the management of the State forests, of 3,000,000 acres of communal forests and with the supervision of all forest estates owned by corporations.

All the tree species, which grow in middle Europe may also be found in Hungary. The chief species are the following: oak, comprising 27% of the whole forest, beech and other broad-leafed trees 52%, conifers 21%.

The forests are cultivated according to the directions of the Hungarian Forest Law (Art. XXX. 1879). This law orders that such woods, the soil of which cannot be otherwise constantly cultivated, or such woods, whose maintenance is necessary to other land, must not be extirpated; removed timber must be replaced within a term of six years.

The State helps in the re-planting of forests and barren territories, especially by distributing young shoots free of charge. Between the years 1883 and 1901, 358,000,000 shoots of different species have been distributed. The result is a very satisfactory one, chiefly because the re-wooding is supervised by the State foresters.

Forest management of late years has become more and more intensive and many woods which years ago were cut down only for firewood now produce valuable timber. Great endeavours are being made to enhance the value of the beech woods; in consequence of the dearness of oak, impregnated beech is used by railways. Great weight is also laid on the cultivation of the oak woods. As is known, Hungary produces the best staff woods.

In Hungary there is a flourishing timber trade; the greater part of the timber merchants hold a large capital. The value of exported timber is about £2,000,000 yearly.

VII. BREEDING OF FARM STOCK.

The breeding of live stock in Hungary was always an important branch of agriculture and when this became more intensive, the breeding of live stock too gained more in significance. As a matter of course, the Government has always endeavoured to forward the development of this source of national prosperity. Cattle shows are arranged by the Agricultural Societies for the purpose of improving the breeds; prizes are given by the State for the finest specimens. Bulls, stallions, rams and boars are sold by the State to the several villages at a deduction of 20%, the prices being paid in instalments. The State rears these animals on its own farms and also buys them from private farmers and from abroad.

The Government takes also special care to avoid the importation of epidemics. For this purpose, on the frontier, at railway and steamboat stations, about a thousand inspecting offices have been set up. Without certificates from these, animals can neither be imported nor exported, and as soon as an epidemic breaks out in any district, the further transport of animals is forbidden.

(a) *Cattle Breeding.*

According to the census of 1895, there were 7,000,000 cattle in Hungary, that is to say, in 35 years their number had increased by 20%, and a still more important fact is that the quality had also greatly improved.

In late years the State has granted yearly £42,000 for the encouragement of cattle breeding and dairy farming. The whole country has been divided by the Agricultural Ministry into districts and in every district endeavours are made for the breeding of the most suitable species.

In Hungary the following are the most common breeds; the Hungarian, especially for drawing the yoke, and Pinzgau, Berne, Simmenthal and Innthal for milking. Besides these there is a peculiar Hungarian class, the so-called Bonyhád, useful for yoke and dairy purposes, to be found chiefly in the counties of Tolna and Baranya.

There are 300 to 400 private breeding farms, on many of which there are 100, 200, 500 and even 2,500 pure-bred cows.

In connexion with cattle breeding, dairy farming has also reached a high state of development. On the initiative and partly with the support of the State 400 co-operative dairies have been formed in villages in the last few years. The most of the co-operative dairies only skim the milk and send the cream to a central dairy, where one kind of butter is prepared from it. Five such central dairies are in existence and their number will no doubt in a short time be multiplied. The butter prepared there is sent abroad, where by its first-rate and uniform quality it has quickly gained a market. In 1901 the co-operative dairies had 41,000 members with 70,000 cows yielding dairy produce worth £290,000 for the year.

The export of cattle in Hungary is continually increasing, and this is also the case with the consumption of dead meat. The value of exported cattle was in 1891 £2,330,000, in 1897 £3,125,000, in 1900 £4,830,000.

(b) *Horse Breeding.*

According to the last census in 1895, there were 2,500,000 horses in Hungary. The Government has always taken especial pains with horse breeding, also for the purpose of providing the army with good animals. In 1785 the first State stud was founded in Mezőhegyes, followed a few years later by a second one in Bábolna. In the middle of the XIXth century the Kisbér State Stud and in 1875 the Fogaras Stud were formed.

The aim of these State studs has always been by a consistent method of breeding to rear animals suited to the demands of the various districts of the country. For this purpose in Kisbér there are bred English pure-bred and half-bred, in Bábolna Arab pure-bred and half-bred, in Mezőhegyes sturdy English half-bred, Big and Little Nonius (Anglo-Norman), Gidran (Anglo-Arab), and in Fogaras Lipiza races. Besides these in the stud farms the following breeds are to be found: in Gödöllő Little Nonius, in Mezőhegyes Big Nonius, in Kisbér cold-blood and in Kolos English half-bred. In these studs there are altogether 112 pedigree stallions and 1,485 mares, the whole stock consisting at present of 5,015 animals.

In the interest of general breeding the State maintains stallion depôts, the sires for them are partly reared in the State stud farms, partly bought from private farmers. There are 4 such depôts with altogether 19 branches, supplying 1,000 stations, with 3,100 stallions to serve the mares. In the season of 1901 these stallions covered 119,114 mares, the service fees amounting to £33,000. Besides these 200 stallions were hired out to private breeders for service; these covered about 7,000 mares, the fees amounting to £8,000.

In the interest of the encouragement and development of horse breeding the State assists in the holding of horse shows and of horse races. Last year £12,500 were distributed by the State in prizes amongst the different horse breeding societies.

The State spend yearly about £125,000 in the interest of horse breeding. It is to these measures and endeavours that Hungarian horse breeding has kept up the special good qualities, hardiness and sturdiness, of its horses, which have made Hungarian breeds so popular in the world market. The good qualities of the Hungarian horse are shown by the steady and increasing export, which to-day represents 40,000 horses to a value of £1,000,000.

(c) *Sheep Breeding.*

Sheep breeding in Hungary, as well as in the whole of Europe, is on the decline. In 1895 sheep were reckoned only to the number of 8,000,000. The once celebrated breeds Electoral-Negretti and Merino in consequence of rivalry beyond the seas, began to cross with English breeds, but without any great result, the export being crippled by the French customs; the country, moreover, is no good consumer of mutton. Nevertheless, the Government endeavours to indigenize a good stock for consumption by importing pure-bred English rams, and further to improve the price of wool by the support of wool auctions.

Although the export of sheep is on the decline, it is, nevertheless, of some importance. In 1900 an export of 140,000 sheep fetched £100,000. The value of the wool export is still more remarkably diminishing. In 1900 wool was exported to the value of £600,000, while 20 years ago it was five times as much. Of late years a little increase is noticeable.

(d) *Pig Breeding.*

In 1895 the number of pigs in Hungary amounted to 7,500,000, but in the following three years 1,500,000 pigs perished by swine fever.

The breeding of pigs in Hungary is rather one-sided. There is only one type—the bacon pig, the so-called "mangolicza," the principal advantage of which is its great susceptibility to fattening. Lately the breeding of the English porker type is also being propagated in Hungary, but this could only be extended in a greater measure, if its export to England were assured. For the improvement of the breed unexceptionable boars are provided by the State at a moderate rate, the fees being paid in instalments.

The world-renowned pig fattening depôt of Kőbánya established 50 years ago has exercised a great influence on pig breeding. This institution stands under strict inspection by the Government; pigs coming from Servia and Roumania must be kept in quarantine for 6 days and only then on the certificate of a veterinary surgeon can they be used for fattening purposes. This depôt covers an area of more than 250 acres. More than half a million Hungarian and about a quarter of a million Servian and Roumanian swine are received yearly into the depôt. The greatest pig export was in 1894, viz., 1,500,000 to a value of £6,500,000; since then in consequence of the swine fever it decreased in 1897 to 200,000; but of late years it has again been on the increase, and in 1900 485,000 pigs were exported to a value of £2,500,000.

(e) *Poultry Breeding.*

Poultry rearing is an important branch of farming in Hungary. In 1884 there were 32,000,000 fowl in the country, the best part of which were to be found in the Plains. The Government has by experiments determined the races of poultry best fitted, under the conditions of climate in the various districts, for breeding, and exchanges these with the small farmers for commoner poultry and eggs. The races determined on are the following: the Plymouth, Langshan and the better indigenous breeds, further the Peking duck and the Emden goose.

The significance of poultry farming is best to be seen from the great poultry export. Hungary exported in 1901 poultry and eggs to a value of £3,000,000; this export is still capable of much development. Lately many co-operative societies have been formed in the interest of the egg trade. These collect the eggs from the small farmers and export them through the central society ("Hungarian Farmers' Co-operative Society for supplying the Market Hall" in Budapest). The boxes are stamped to show the buyer how many days old the eggs are.

(f) *Apiculture.*

Bee-keeping, with little expense and trouble, furnishes a very nice income, and the Government has lately done much for its development. Seven itinerary instructors go through the country teaching the people the art of bee-keeping.

Bee-farming is taught in the training schools, and assistance given to teachers and priests for the purpose of introducing bee-farming into their villages. The necessary implements are also distributed by the Government free of charge to deserving cases.

In 1899 a bee farm was set up in Gödöllő by the State, as a pattern to beekeepers, for the carrying out of experiments in apiculture, in the preparation of honey and wax, and in the cultivation of honey-producing flora. For practical instruction in work on bee farms short courses of lectures are held also for teachers, priests, gardeners and small farmers.

In Hungary there are 660,000 beehives, the value of the wax and honey harvest amounts yearly to about £170,000, £42,000 worth being exported.

(g) *Pisciculture.*

The rivers of Hungary were always abundant in fish, but in the second part of the last century the extensive river regulation and the raids of poachers have caused much damage amongst them. The Government has done much to encourage pisciculture and has determined the rights of fishing by appropriate laws. It distributes roe free of charge to societies and to private landowners for stocking lakes and rivers. With the encouragement of the State 55 fishery societies have up to the present been formed with a range of 311,000 acres, and 78 private fisheries with a range of about 15,000 acres. For the stocking of the mountain streams there are 82 spawning stations. Through these the plan of acclimatizing the rainbow trout of California has succeeded.

(h) *Sericulture.*

Sericulture in Hungary is managed by the State, but the production itself is a private undertaking. The Royal Hungarian Superintendent of Sericulture (in Szegzárd) distributes freely to everyone as many eggs as required. In the Silkworm Breeding Station of the State in Szegzárd the whole collection is examined by microscope according to the method of Pasteur with the aim of providing the public only with healthy eggs. The Station produces yearly almost 4,400 lbs. of eggs and performs 7,000,000 examinations with the microscope. It imports also yearly 1,760 lbs. of eggs from France and Italy. To-day 100,000 families in 2,500 communities occupy themselves with the culture of silkworms. In each of these communities the Superintendent engages commissioners to supervise the whole treatment.

The State provides for the propagation of the mulberry trees, distributing from its forests several million every year. In the whole country there are besides these 145 State nurseries. Many high roads and public squares are also planted with mulberry trees.

The cocoons are bought by the State at the average European market price. There are 24 cocooneries. The yearly cocoon production is to-day 3,850,000 lbs. A part of the cocoons is spun in the filatories of the State and is exported in the shape of thread. Formerly Hungarian silk thread found the best market in Lyons, but in recent years it has made a conquest too in America and Germany; the greatest part is exported now to America. At the silk exhibition of Lyons in 1894, Hungarian silk thread gained the first prize. Recently the number of filatories has been increased by the State; there are at present five, let on lease under favourable conditions to well-known Swiss and French manufacturers.

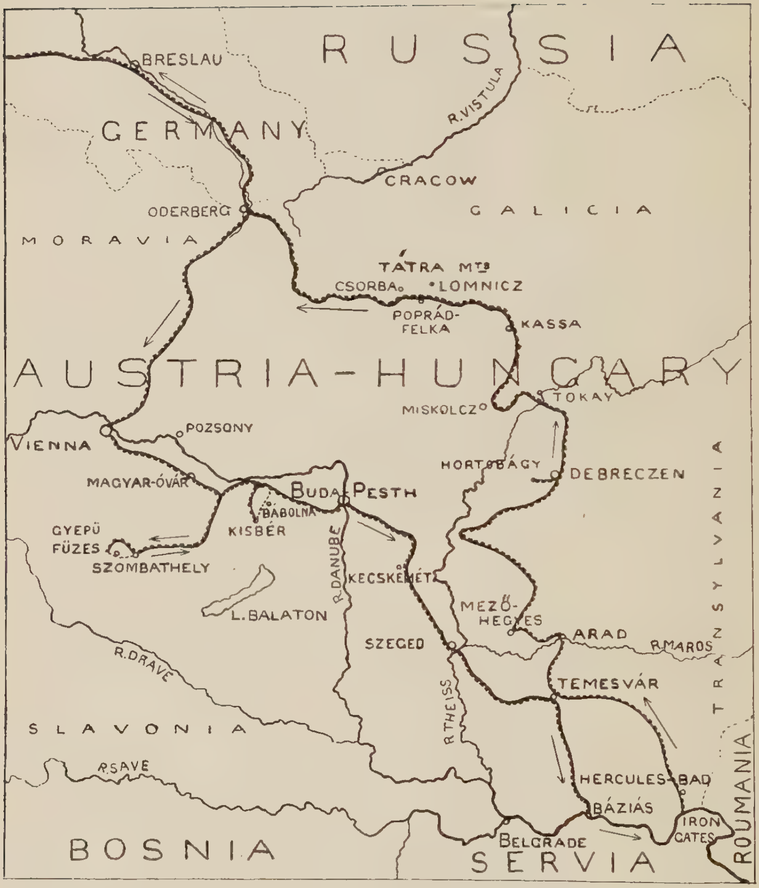
In one word, every endeavour is being made to naturalize on a sound foundation the silk industry in Hungary. This must take place through private enterprise supported by the State. The yearly earnings of labourers occupied in sericulture amount to £125,000 a-year.

* * *

In conclusion, the value of the agricultural products of Hungary on the whole is increasing. Within the last fifty years this growth has been rather extensive, so much bare land having been made arable. There now remain only a few hundred thousand acres capable of amelioration, so that the limits of this extensive development are already very near. On the other hand so much the greater is the sphere for intensive development.

If Hungarian agriculture is more closely examined, it is also to be seen that farming is a sure and permanently profitable enterprise. The productiveness of a land richly blessed by nature, the favourable conditions of soil and climate, the diversity of the production, the favourable conditions of the agricultural industries, the sure markets, all exclude the possibility of Hungary reaching a grave crisis in agriculture. The branches of culture are everywhere varied and multifarious ; there is not one case where either one or the other so much predominates that the failure of the crop could ruin the whole farm.

The amelioration of the soil, the use of stable and artificial manure, the proper method of farming, the careful selection and improvement of seeds and breeds, and the employment of science in agriculture, are becoming more and more general. The veterinary service is reliable, in every branch of culture an intensive direction is developing, the Hungarian farmer is gradually freeing himself from the power of the elements, his income is becoming greater and surer, and in one word the agriculture of Hungary stands on a firm foundation and its lucrativeness is permanent.



Map showing the Route of the Essex Agricultural Party through Hungary.

VISIT TO HUNGARY.

As the result of enquiries made in Hungary during September, 1901, cordial letters were received by the Technical Instruction Committee of the Essex County Council, early in 1902 from Dr. Ignacz Darányi, Royal Hungarian Minister of Agriculture, and from Count Aurel Dessewffy, President of the National Agricultural Society of Hungary, assuring the Committee of the warm welcome a party of British farmers would receive, and that measures would be taken to render such a visit instructive and agreeable.

Acting upon these very kind communications, the Committee undertook the necessary arrangements for making up a party, the 47 gentlemen being finally included whose names are given on page 4. Starting from London on the morning of Friday, May 16th, the party travelled to Vienna by way of Flushing, Hanover, Breslau and Oderberg. In Vienna, where the Sunday was spent each member was presented with a guidebook, edited by the Minister of Agriculture, containing an itinerary of the journey that had been planned under his direction and descriptions in English of Hungarian agriculture and the various objects of interest to be visited. Badges silvered and enamelled, to be worn by each member of the party, were also distributed. They were here met by the three Hungarian Conductors :—

Mr. György, Endre, Agricultural Commissioner in London for the Hungarian Government ;

Dr. Goger, László, Secretary in the Ministry of Agriculture.

Mr. Szilassy, Zoltán, Secretary of the National Agricultural Society of Hungary ;

These were the gentlemen by whom the actual details of the journey had been arranged and to whom the successful carrying out of the programme during the ensuing fortnight was due, and they not only won the admiration of all, for their stores of knowledge, for their marvellous linguistic powers, especially as interpreters of the addresses delivered, and for the "go" and good humour they displayed throughout the journey, but they also won the lasting friendship and esteem of every single member.

Monday, May 19th.

On arriving at the Staatbahnhof in Vienna, a special first-class corridor carriage of the Hungarian State Railway, placed at the free disposal of the party by the Government, was found to be waiting. This and two similar carriages added later in the day, all provided with beds for the night journeys, were to be more or less for the next fortnight the home of the party, who thus found themselves at the outset of their travels guests of the State. After a journey of about an hour, the river Leitha was reached which here forms the frontier of Hungary, after passing which telegrams of greeting were dispatched to the Hungarian Prime Minister, the Minister of Agriculture and the President of the National Agricultural Society, greetings which all three gentlemen afterwards acknowledged at Budapest.

ESTATE OF H.R.H. THE ARCHDUKE FREDERICK.

At Parndorf station the party were met by Mr. Ferencz Rohrer, director of the estate, Mr. József Pécska, manager of the brewery, and Professor Victor Thallmayer, of the Agricultural Academy at Magyar-Óvár. Twenty Victorias were in waiting. Each carriage was drawn by a good pair of horses, harnessed with breast straps instead of collars, and snaffle bits without curbs, which are rarely used in Hungary, where the drivers seem to control their horses as much by the voice as by the rein.

The track led through a district of peasant holdings, in size from 300 acres downwards. The land was cultivated in long strips, perhaps 10 to 15 ft. wide and a quarter of a mile long. The origin of these strips, it was ascertained from the conductors, is that a fair subdivision of both the good and bad land might be effected between the sons of a deceased peasant. Peasants often own several such strips at some distance from each other ; the houses are grouped into large villages, so that a peasant's farmstead is perhaps two or three miles away from his land ; all this involves so much travelling that at harvest time the peasants and their families sleep in the fields and work as long as it is light. It

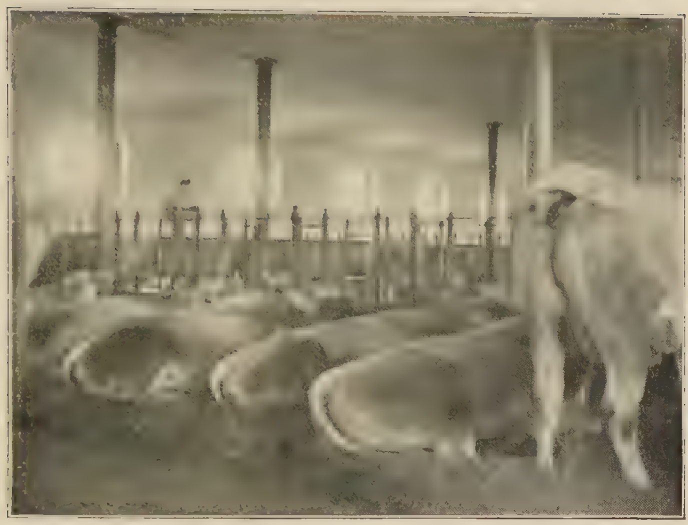


Fig 1. Prince Frederick's dairy farms ; interior of a cowhouse

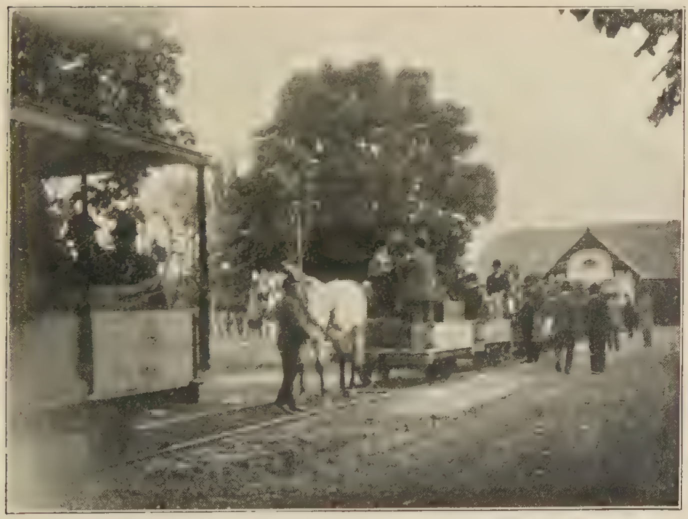


Fig 2. Prince Frederick's dairy farms ; light railway for conveying milk to station.

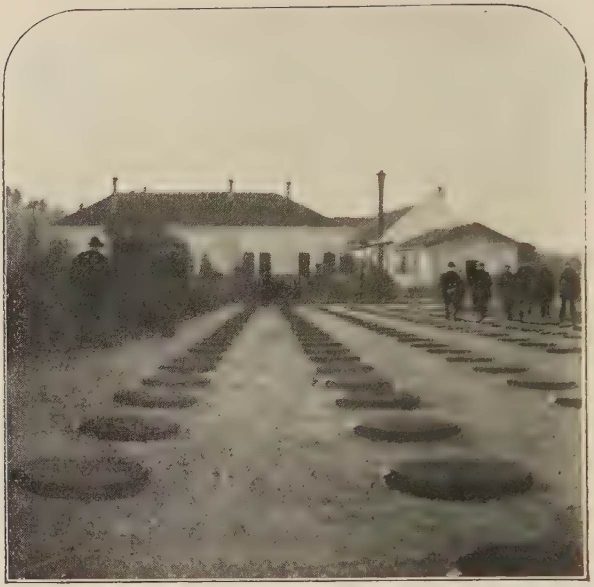


Fig 3. Station for field-crop and plant-culture experiments, Magyar-óvár.

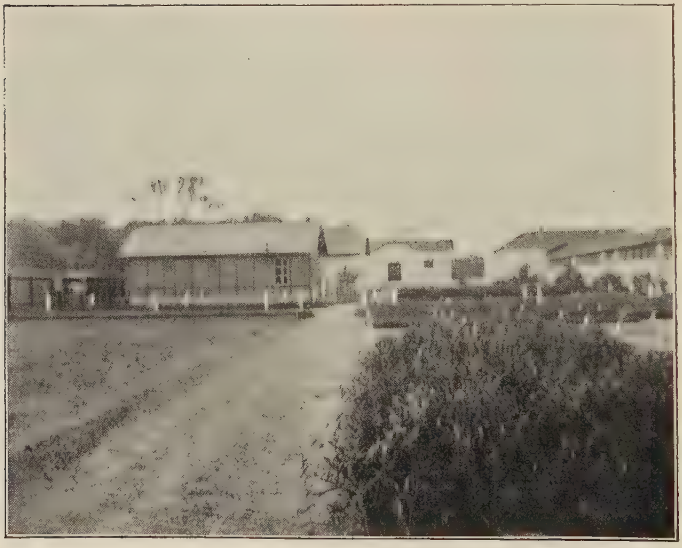


Fig 4. Station for seed-control and plant physiology and pathology experiments, Magyar-óvar.

is said that they have insufficient capital and are becoming worse off each year. Nearly all these small farms are owned by the peasants, but if hired the rent in this locality amounts to about 17/- per acre together with rates and tithe.

The road led through these peasant holdings, rye, wheat, mangolds and maize being the principal crops seen. There was no hedge and no ditch, the road was not metalled, and in places would seem to be impassable to an English driver, but the carriages zigzagged along the best part of the track, or sometimes drove out into the open field to avoid a particularly bad place.

After some miles the boundary of the Archduke's estate was reached. Here the land was much better cultivated and the difference in the appearance of the crops was very marked. The estate is 45,000 acres in extent (about one-third of the whole of the Prince's estates). It is divided into seven farms, each with its farmstead, those visited during the drive being Frigyes major, Wittmannshoff, and Casimir. The whole is devoted to dairy farming, and the production of milk. The soil is mostly a sandy loam somewhat resembling poor Norfolk soil, and, when taken over some years ago at £12 per acre, was almost derelict, but by careful management has been so much improved as now to bring in about 15/- per acre and to earn about 3½ per cent. on capital. The nett profit on the estate amounts to £30,000 per annum.

The number of the cows on the estate is 2,900. These are of the Algau breed, large animals of a white and dun colour and said to be very hardy, but with tails set higher than is liked in England. By means of the tuberculin test, tuberculosis has been almost eradicated from the herd, the diseased cattle having been reduced from 85 to 2 per cent. All calves are tested and those that re-act are sold to the butcher. To prevent the spread of tuberculosis to the calves the men attending them are not allowed to go into the cow houses. The calves are removed from the cows two days after birth and are then given twice daily milk which has been pasteurized by heating to 185° Fahr., and afterwards cooled to 98°, *i.e.*, the temperature of the calf's body. The milk given to each calf per diem amounts to one-seventh of its live weight. After eight weeks this is replaced by oats and hay.

The cows are always kept in the houses and are fed principally on green food. Earliest in the year comes rye, then a mixture of tares and barley or oats, then peas and barley, then peas and wheat, and later in the year green maize mostly mixed with peas. In winter they get beet and maize silage, in addition to which they have daily three or four pounds of concentrated food (*e.g.*, oilcake and bran) prepared in a shed adjoining the cowhouse. The milk averages 15 pints and contains 3·9 to 4 per cent. of fat ; above the stall of each cow is a slate giving the date of last calving, the daily milk yield, &c. All the milk, amounting to 5,000 gallons a day, is sent to Vienna where the estate has 42 retail depôts, the price obtained by the estate being 7d. per imperial gallon.

The cowsheds (fig. 1), holding from 80 to 200 cows, are 15 to 20 feet high, have tiled floors, are efficiently ventilated and lighted (no doubt with a view to eliminating tuberculosis) and are well arranged for saving labour. Between two rows of stalls runs a tiled walk with feeding troughs on each side and to these the food is brought by a trolley running on rails from the food preparing house. From the paling separating the stall from the walk two or three staves can be withdrawn so that the cow can put her head through to feed from the trough. The cows are chained by two short chains attached by rings to the pales on each side of the opening so that the rings can slide up and down. Between every two cows is an iron water trough one foot in diameter, the water in which is kept at a constant level from a tank outside, fitted with a self-closing lid on a loose hinge to keep the water clean, which the cows learn to raise for themselves after being one day in the stalls. At the end of the first row of cows in each stable is a bull, the proportion being one bull to 60 cows. The cows are never left unattended and an attendant sleeps in the cowshed at night on a platform suspended from the ceiling, a few sacks serving for bedding. Each cowman tends and milks 20 cows. Fever in the cows after calving is said to be effectually prevented by injecting into the teats of the udder a 4 per cent. solution of iodide of potassium.

The labourers on the estate receive wages amounting to about £21 per annum, £7 of which is paid in cash and the remainder in kind, the men getting maize, corn, rye, firewood, and milk, together with lodgings. They are paid as an extra at harvest 5s. per acre of corn harvested by hand. Women get £5 as against £7 for men. All the labourer's dwellings are upon one floor and usually in blocks for four families, consisting of a common kitchen in the centre, with four suites of rooms leading out of it, each suite consisting of two rooms.

For cultivating the land Fowler's steam ploughing tackle is chiefly used, but, in addition, horse ploughs made to turn one, two or three furrows. For chaff cutting, beet-root pulping, corn grinding, threshing, and pumping, electrical power is generated by an 80-h.p. engine at the Wittmannshoff farm; the power being transmitted to six farms within a circle of two miles of the central station by overhead wires.

The drive through this splendid estate was a very enjoyable one; from Frigyes-major to Wittmannshoff was partly over "puszta," or uncultivated waste, and partly through wood where pheasants, hares and deer, but no rabbits, were seen. There were many grey-backed crows, but no rooks or sparrows. Though the distance was five or six miles only one house was passed. The timber was chiefly acacia, one of the few kinds of tree that does well on this sandy soil, which is extensively planted on the meadows to afford the necessary shade for stock in the height of summer, but some 60 or 70 acres of young walnut trees had been planted and looked well. Between Wittmannshoff and Casimir the crops of corn, principally rye, barley and oats, looked splendid, the fields in many cases extending to hundreds of acres in size. Casimir afforded the first glimpse of a typical Hungarian village; a street 200 feet wide with acacia trees on each side, the peasant houses standing with gable ends to the street and running back some distance into the garden. The roof of each house (in which were tiny eye-shaped windows) covering the living room, stable and barn, was prolonged beyond the walls to form a sort of verandah which gave protection from the sun in summer and snow in winter.

By the kindness of his Royal Highness an excellent repast was served at Casimir in the large granary, which was brightly decorated with foliage. After the loyal toasts, a telegram of thanks for the kind reception was dispatched to the Archduke, whose health was enthusiastically drunk, and the gratitude of the party was then expressed to Director Rohrer and the other gentlemen who had accompanied them. The journey was now resumed by a horse tramway (fig. 2) from the village to the railway station at Hegyeshalom. The tramway is used to convey the milk from the farms to the railway *en route* to Vienna, and the corn to a great granary capable of holding 10,000 qrs. of grain which adjoins the station.

From Hegyeshalom, where the special railway carriages were in waiting, Moson-Magyar Óvár was reached in twenty minutes. Here a section of the party was detached to pay a short visit to—

KÜHNE'S IMPLEMENT FACTORY AT MOSON.

Although manufacturing industries of this class are said to be severely handicapped by the "Ausgleich" with Austria, which it is stated gives Austrian competition an immense advantage, still this, the largest implement factory in Hungary, was manifestly a thriving concern. Here could be seen all the implements required by Hungarian agriculture, including maize strippers, 1, 2 and 3 furrow ploughs, winepresses, and threshing machines, the Hungarian type of which was said to be better than the English. Owing to low wages, the cost of the various implements was very moderate; for example even ploughs could be exported to England at a profit.

For the sake of the small peasant farmers, payment of sums of a few pounds for a plough, etc., have to be spread over three years. Among many new contrivances, including the latest American inventions, may be mentioned a wire-wove water tank constructed of a 2-inch mesh wire frame cemented within, a machine for dressing thin out of round corn and a seed drill with inside delivery. It was a matter for regret that time did not allow for the whole party to visit these most interesting and up-to-date works from which many useful hints could be obtained.

AGRICULTURAL ACADEMY AT MAGYAR-ÓVÁR.*

A drive of a couple of miles brought the party to the pretty old town of Magyar-Óvár. The streets were lined with people, who gave the visitors an enthusiastic welcome, and the Hungarian word for "welcome" was displayed over the gate of the college, through which the carriages dashed to the grand old building within. Being formerly an arch-ducal palace, built in

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* For a full account of Agricultural Education in Hungary and of the Academy of Magyar-Óvár, see a reprint of a paper in the appendix written by Director Vörös and translated by Prof. Thallmayer, "in remembrance of the visit of English Agriculturists from the County of Essex to Hungary, May 19th, 1902."

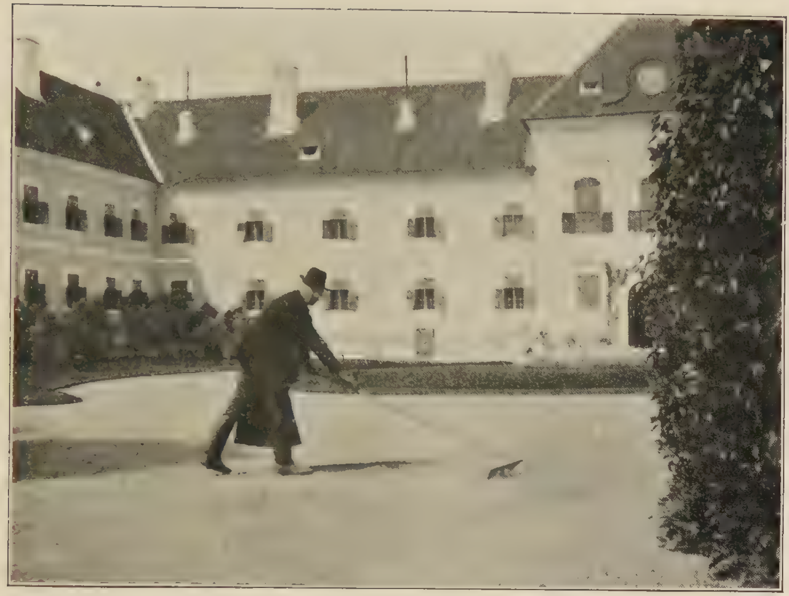

Fig 5. Count George Erdödy's chateau at Gyepü Füzes.

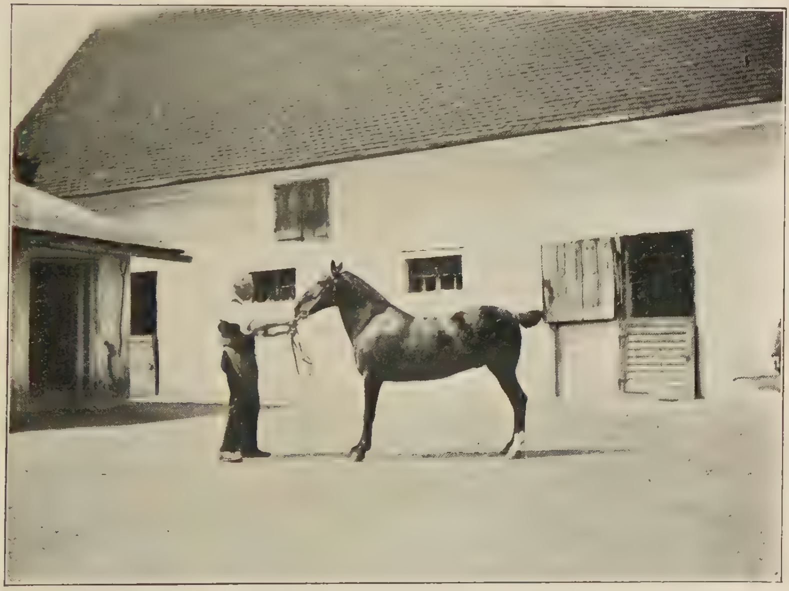

Fig 6. Count Erdödy's Transylvanian pony.

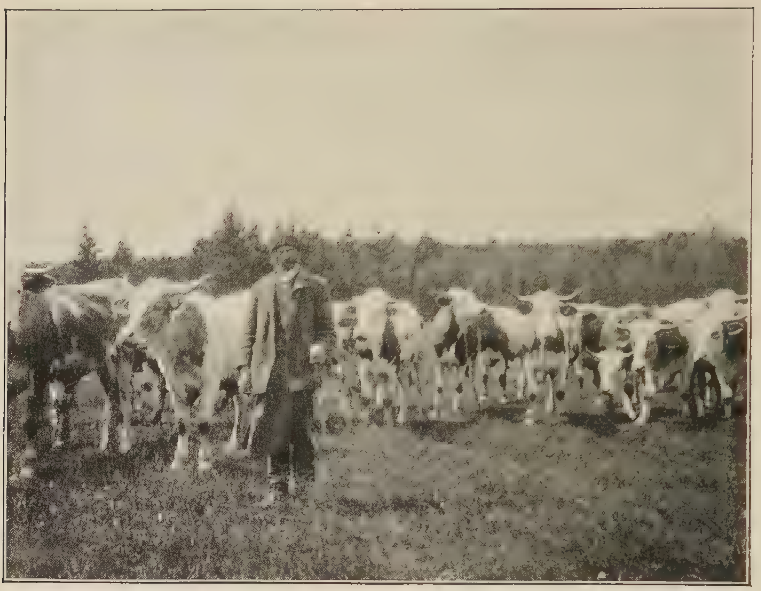

Fig 7. Herd of Bernese-Oberland cattle at Gyepü Füzes.

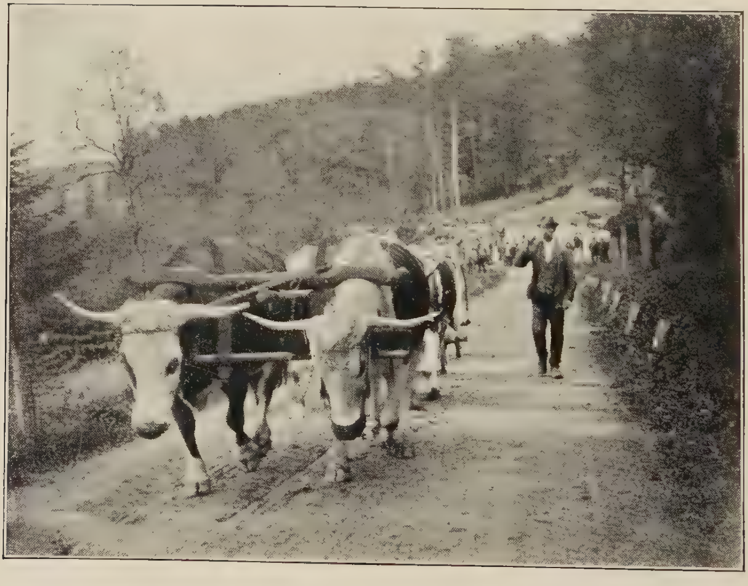

Fig. 8. Oxen drawing stone from quarries at Gyepü Fuzes.

1505, the college, with its massive walls 4ft. thick, stone-paved corridors and vaulted ceilings, has a mediæval appearance, but its laboratories and libraries and museums, for which the old building, though large, provides quite insufficient accommodation, and the distinguished professorial staff, make it the foremost scientific institution in Hungary and place it in the first rank among the agricultural colleges of the world.

In the museums alone many days might have been profitably spent; they showed how useful an aid to agricultural education a properly equipped museum can be. In the botanical section was a magnificent series of specimens of the roots of cultivated plants—clover, wheat, potato, etc.—each illustrating a particular characteristic of growth. The one defect in the museums was that there was not one-quarter the space or light necessary properly to display the collections.

Attached to the college is a well managed dairy farm. The cows, 60 in number, were of the Simmenthal breed, which were said to possess the advantage over the similar Algau cattle of not degenerating through breeding in a country so different from their own highlands. The average milk record was 14 pints per diem, the fat 3·8 to 4·8 %.

In connection with the college are several experimental stations. The first of these visited was the agricultural-chemical control station, of which the Professor of Chemistry is director. Soils, manures, feeding stuffs and other materials are here analysed for farmers and dealers to the number of many hundreds a year. The most important investigation carried on was one upon the gluten contents of different varieties of wheat. This was determined by the tenacity of the dough when rolled out into a thin transparent leaf, and by the breaking strain of a rod of dough when drawn out into a thread. It was understood the gluten content of certain Hungarian flour as thus determined exceeded that of any other.

The station for seed control and for plant physiology and pathology presented many features of extraordinary interest (fig. 4). Professor Linhart, the director, exhibited vines attacked with the phylloxera. which has wrought such devastation among the hill vineyards of Hungary. In the grounds of the station was an ingenious plant hybridising apparatus. Experiments had been and were being made on the liability to rust of different varieties of wheat, and upon the Californian beet-root disease, the results of which were described in treatises containing some wonderfully executed illustrations. It was ascertained that "clover-sickness" is unknown in Hungary, the deep rich soils probably accounting for this immunity. The extent of the work of the station can be judged from the fact that last year the number of seed samples examined amounted to 1,321, and the number of phytopathological cases studied to 3,013.

The station for field crops and plant culture experiments is planned on the well-known lines of Wagner's station at Darmstadt (fig. 3). A long glass house, with windows which can be opened on every side, is supplied with tram lines on which trolleys, bearing zinc or earthenware pots, can be run out into the open air. This provides accommodation for 1,200 pots for manurial experiments. There are also 600 large pots which are embedded in the soil, so as more nearly to approximate to the conditions of the open field, and also cemented pits for vine manuring experiments. The methods of water supply and drainage deserve attention. By the forethought of the Director the pots had been labelled in English. An abstract of a pamphlet by Professor Alexander Cserháti, the director, descriptive of the work of the station will be found in the appendix.

After inspecting the college, farm, and experimental stations, an adjournment was made to the playing grounds, situated amid a forest of splendid timber, where the students of the college were engaged in a "flying ball" match, a game resembling football, but played with the hands instead of the feet. The men appeared to be a fine athletic set. The number of students this year is 157. As sons of large farmers and estate owners they are men of good education; they must, on entering the academy, produce the final examination certificate of a "gymnasium," and a certificate that they have had a year's practical training on a farm or estate.

The Academy entertained the party to dinner at the Black Eagle Hotel, the great salon of which was beautifully decorated. The Lord-lieutenant of the county, the Hon. Mr. Eugène Nagy, presided, and the company also included Director Alexander Vörös, Professor Thallmayer, Professor Linhart, and other professors of the academy, Mr. Pécska, Pastor Balog, Mr. E. Kühne, Mr. C. Kühne, and a large number of other gentlemen. Like the programme for the day, the menu was printed in English. After the loyal toasts, and a word of welcome from the Director, the toast of the Minister of Agriculture, and afterwards that of the Director and Professors, were given and drunk with an enthusiam which it is hoped proved the gratification felt by everyone.

At a late hour the company walked to the station, enjoying the coolness of a beautiful night,* and highly gratified at the reception they had received and the objects of interest they had seen on this the first day of their visit to Hungary.

Tuesday, May 20th.

GYEPÜ FÜZES.

Travelling through the night, Szombathely was reached at 6 o'clock the following morning and after an early cup of coffee, the journey was resumed on a branch line for Német-Szent-Mihaly. The morning had broken clear and sunny and the hilly country through which the line passed looked charming against a background of the snow covered mountains of the Semmering. Carriages were waiting at the station in which, led by the Count's Steward (Mr. Arthur Sziklai), Gyepü Füzes, the Chateau of Count George Erdödy, was reached after an hour's drive (fig. 5).

The estate is 14,000 acres in extent. In addition to the arable and meadow land, there are several thousand acres of splendid forest. The meadow land is worth about £30, the uplands, mostly forest, about £15 per acre. The land is heavier and poorer than most of that seen during the journey, but, by economical and eminently practical management, yields a fair return. Wheat is the principal crop and the rotation includes several green fodder crops for the dairy cattle. Seven thousand fruit trees have recently been planted.

Fortified by an excellent breakfast served in a fine vaulted chamber overlooking the park, the party were first led by the Count to the dairy. This was under the management of Miss Eliza Baynes, an Essex lady, trained in the dairy school of the Essex Technical Instruction Committee, and well known as winner of competitions in the dairy show at Islington, whom it was a great pleasure for the party to meet. Formerly the butter made on the estate fetched hardly 1/- per lb. in the neighbourhood, but now, owing to Miss Baynes's skill, it fetches on the average 1/6 per lb. in Vienna, the highest price on the market. About 350 lbs. in winter and 900 lbs. in summer is made weekly. If not absolutely equal to our best Jersey butter, the flavour of this butter, made from the milk of cows of pure Swiss breed only, was at any rate excellent.

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*It was here that the two ornithologists of the party mistook the loud love-song of lusty frogs for the chattering clamour of the corn crake.

In the stables was a fine show of horses, and general admiration was expressed for a beautiful Transylvanian pony (fig. 6). The carriage house contained, in addition to a number of traps of British manufacture, several sleighs, bearing witness to the rigour of a Hungarian Winter.

The farm buildings were on the other side of the park. All the dairy cattle (160 cows, of which 110 were in milk) were of the Bernese Oberland breed, which the Count stated were hardier and less liable to tuberculosis than the Simmenthal, which they closely resemble in appearance (fig. 7). Their value averaged £15. The green fodder they were receiving was a mixture of winter peas and barley, and tares come later on. Complaint was made of the difficulty of securing the services of good milkmen. The calves were numbered by a metal plate rivetted through the ear. The pigs were of the Mangolicza breed (fig. 10). There were no sheep as they are said to be subject to fluke in this heavy land district.

The carriages were now brought round for a drive through the estate, a drive which to the botanist and geologist proved exceptionally interesting. The geological formation was revealed at a stone quarry which had been recently opened to provide metal (sold to the county authority at 3s. per cubic yard) for the roads, which have been vastly improved in consequence, and was found to be dolomitic limestone, the strata much inclined and contorted.

For drawing the stone from the quarry, and also for all ordinary farming purposes, roughly made waggons were used in which four wooden upright stays loosely fastened to the top rail of the waggon bear upon an extension of the axles on each side, thus greatly adding to the strength for rough work. Each waggon was drawn by a team of four cross-bred Simmenthal oxen, enormous animals with the faces of Herefords, some of which measured 16 hands high, shod for road work (fig. 8). The teams were controlled by the drivers by word of mouth. These oxen are worked for two or for three years, then fattened for six months, when a good one will weigh a ton and fetch at least £36 for beef. Those which have not been used for labour fetch a higher price (£40), but are in the end less remunerative. They possess the advantage over horses of being more economical in cost of food and that they can be fattened after use. For road work, however, horses are admitted to be superior to oxen.

At a further point in the drive, a halt was made at the clearing in the forest shewn in the illustration (fig. 9). Fine timber of 80 years growth was stated to be worth over £60 per acre (15/- per acre per annum) not reckoning the value of the thinnings. One eightieth part of the timber is felled each year, peasants doing the felling for one-third of the stumps, which they also grub out. The trees are very thickly planted to begin with, pines 2 ft. 6 in. apart, and firs 2 ft. apart; acorns are planted direct, but pines are planted out from the nurseries when 3 years old, and firs when 1 year old. The wood is thinned out when the thinnings are large enough for use as telegraph posts. In addition to the various uses of the well-grown matured pines, the wood is used as fuel for domestic purposes, the stumps as fuel for steam boilers, while the chips are a perquisite of the wood cutters.

Returned to the Chateau, Count Erdödy entertained the party at luncheon served in the central chamber of a splendid suite of rooms that occupy the entire length of the building. The walls were hung with portraits of eminent ancestors, among whom was the famous Rakoczy, the King whose stirring march is the most inspiriting of the national airs of Hungary, and a Bishop of Erlau of the 16th century, afterwards Cardinal, who was destined for the papacy, but that he manifested sporting proclivities by driving into Rome behind a foursome of stags! The table was tastefully decorated with flowers, ferns and growing fruit, and supplied with wine of excellent quality, grown on the estate, in which the health of the noble host and absent hostess were drunk with an enthusiasm which, hearty though it was, could only inadequately convey the appreciation felt by the party for a visit so full of interest, and entertainment so perfect.

Still accompanied by the Count, the party were now driven to another part of the estate, about 14 miles away. Much of the journey was through forest, said to harbour bears and wild boars, and to afford splendid hunting. Here was the ancestral castle of the Erdödys, a massive four-sided building, enclosing a paved quadrangle, and surrounded by a double moat with a drawbridge and chain. The castle having been bequeathed, according to Hungarian custom, to two sons equally, it had not been inhabited by either, and was now falling into decay.

This part of the estate comprises 4,500 acres, for cultivating which 51 pair of oxen are required. Adjoining the castle is the village, inhabited by the peasants and labourers who work on the estate. The peasants each have a plot of freehold land, which, by equal sub-division between the sons on the death of the father through several generations, has become reduced from the size of a useful small farm to a mere allotment of half-an-acre. These plots, although yielding the merest pittance to the holders, are tenaciously retained by the peasants. The labourers on the estate are chiefly Slavonian, whose wages run from 4s. to 6s. a week, together with a house and certain rations, and extra at harvest.

The cottages are single storied and reed-thatched. Four families generally live in a cottage; in the centre is a common kitchen with a large stove in the middle, and leading out of this are the four rooms, one room for each family, with a pantry adjoining. Much heavy labour is done by the women, who were seen carrying bricks and mixing mortar, putting up fences, etc. Indeed, a considerable part of the rough work is done by the women in this part of the country. The land-owning peasants also work on the estate, being paid often in kind; for example, women were seen flagging wheat, half the toppings being taken in payment and used for fodder.

The village school is maintained by the land owners. Attendance of the children is compulsory from 6 to 12 years of age. They pay ½d. a week for school fees or, as an alternative, take wood for the school firing. The boys who have left the day-school receive practical instruction in wheel mending, basket making, etc., in the evenings.

The time had now come for leave taking, and hearty were the cheers as the party drove away for the final 14 miles drive to Szombathely. The town was reached at 8 o'clock, supper was taken at the fine new railway station, and the railway carriages, which had already begun to seem like home, were soon occupied by sleeping tenants.

Wednesday, May 21st.

THE STATE STUD FARM AT BÁBOLNA.

After an all night journey, the railway station of Acs was reached at half-past five in the morning. Twenty-four carriages, magnificently horsed and driven by coachmen dressed in a smart Hungarian uniform, were in waiting. This is a country of extremes, and, contrasted with the splendid equipages, was the deplorable condition of the roads, many inches deep in mud, through which the carriages splashed at 12 or 14 miles an hour, bespattering many of the occupants from head to foot.

A short hour brought the party to the headquarters of the staff on the Bábolna estate (fig. 11). Breakfast was served in the Casino and commenced with a glass of cognac, followed by tea and coffee. In Hungary Russian tea is used, and this makes a beverage of delicious aroma and delicate flavour. A half-hour's rest afterwards provided an opportunity of perusing the short account of the State stud-farms of Hungary, supplied by the Minister of Agriculture, and printed in the appendix on page 152.

The stud at Bábolna is managed by a military staff at the head of which is Colonel Fadlallah el Hedad, an Arabian who came to Hungary in 1866 with the first batch of Arab horses purchased by the Hungarian Government direct from Arabia (Arabs have been bred at Bábolna since 1783), and has risen step by step to his present responsible position. He still regularly visits Arabia every year to purchase horses. The gentle manners and obvious happiness of the horses spoke volumes for his method of training. Apparently he knew every single horse in the stud and certainly every horse knew him, for on hearing his voice in entering a stable, they would, if loose, come to search in his pockets for a lump of sugar. The proverbial affection of an Arab for his steed was exemplified in Col. Fadlallah.

Better kept stables could nowhere be seen. They were about 220 feet long by 36 broad, light, lofty, and well ventilated, with an ample covering of clean straw. A manger ran the length of the stable on each side to which each horse was tied in its place by means of a ring, the rings being about four feet apart. In every stable was a donkey, in order to familiarize the young horses with the sudden noise of braying. The horses are turned out to grass, and there are paddocks in connection with the stables in which they exercise in wet weather.

One of the first stables visited contained 54 two-year-old half-bred Arab fillies, a beautiful lot having all the Arab characteristics of lightness of build and graceful movement, said to be worth about £45 apiece. The usual colour was bay, but there were a couple of dark greys which gained special admiration (fig. 12). Presently the halters were taken off, and they all gathered round to be petted and fondled like children ; then off for a run up the stable and back again to push in among the group of visitors and nose them contentedly. Even among themselves there was no sign of vice, as if they had learnt gentleness from their masters both to their own and to human kind.

Other stables contained 10 pure-bred Arab stallions, 50 half-bred stallions for hireing out to farmers at a fee of 6s. per service, 55 two-year-old stallions and 50 half-bred yearling stallions. The two-year-olds were allowed to run loose in the paddock, one or sometimes two at a time, and their beautiful Arab action, of which the illustration (fig. 14) gives some idea, excited universal admiration. It transpired that stallions are used for breeding when four years old, and that 19 mares are allowed to each stallion.

With regard to the mares and foals, the following statistics for last season were ascertained :—The mares served numbered 170, of which 12 were barren, no mares were lost in foaling, the number of foals was 143, there were two more mares to foal, and 13 foals had died. Last year the number of foals was 93 per cent. of the mares, but out of 140 foals, 48 had died from an epidemic, *i.e.*, 30 per cent. On the average of several years, the loss of foals was 20 per cent., the loss of mares 1 per cent. The brood mares get 5½ lbs. of oats daily and hay. The foals get oats and hay for the first year, after which, till they begin training, they get only hay.

While the stud is under military control, the three farms constituting the estate are under the direction of a civilian, Mr. Julius Ruisz. The management appears to be excellent ; never had an estate been seen better looked after. The display was perfectly organised :—an army of labourers marching to their work, a drove of horses crossing the track, a team of especially fine Hungarian oxen and pair of buffaloes driving up, 12 ploughs at work in a field with four oxen to each plough,

Fig 9. Forestry at Gyepü Füzes

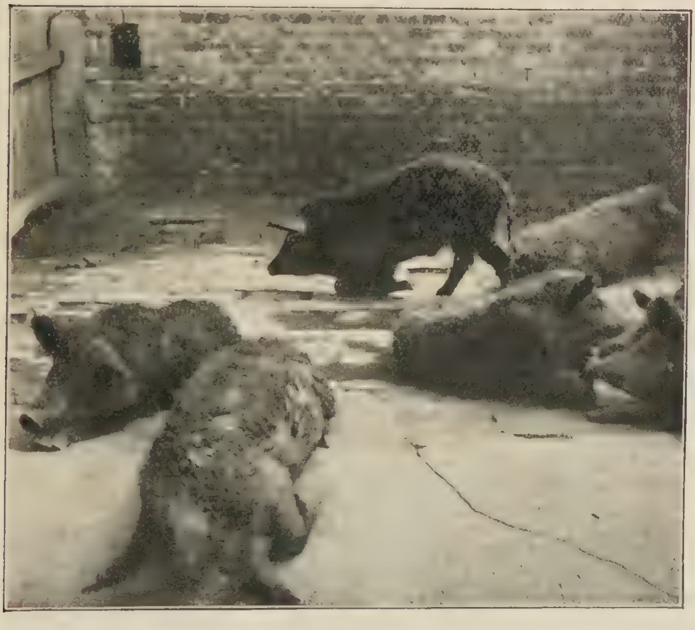

Fig 10. Hungarian swine at Gyepü Füzes ; shewing slope to the cemented water trough usual in Hungarian pig sties.

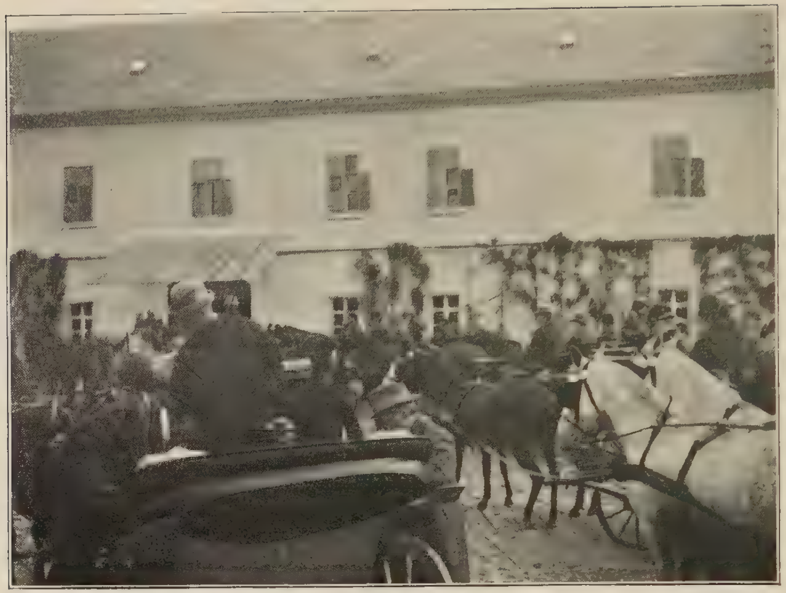

Fig 11. Headquarters of the staff at Bábolna ; shewing departure of the party in twenty-five pair-horsed carriages,

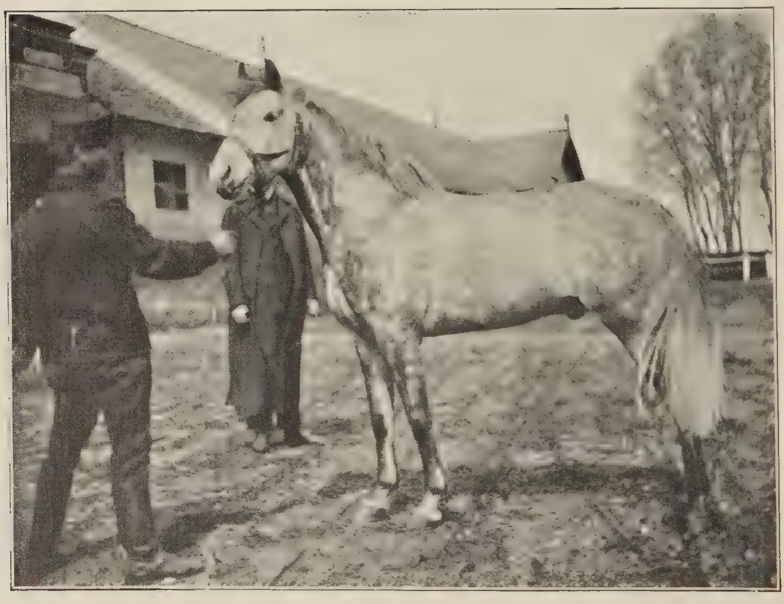

Fig. 12. Thorough-bred Arab stallion, " Maneghie " in Royal Hungarian stud at Bábolna, bred in 1891 by Bedouin tribe, Anaze el Sbaa.

and sheep and swine arriving at the road side of the meadow, all at the precise moment when the party in their 24 carriages were passing.

The dairy cattle were of the pure Simmenthal Swiss breed (figs. 15 and 16). The cows, 106 in number, a fine looking lot averaged 14 pints of milk containing $4\frac{1}{2}$ per cent. of fat. The bull calves are reared and ultimately sold by auction to the village communities for breeding at about £50 each. This class of stock also included 80 fat bullocks, large creatures four to six years old, several of them as much as 16 hands high and averaging 15 cwt. These had been bought in the summer, worked during the autumn, tied up on December 1st and stall fed till May 1st, when they were ready for sale by auction. The rations while fatting are:—9 lbs. maize, $4\frac{1}{2}$ lbs. dried distiller's grains (see page 78), 13 lbs. of hay and 55 lbs. of beet pulp ensilage (see page 87). From a board fixed above each bullock, on which the monthly weighings were given, it was ascertained that the average gain per day was 2lbs. 14 oz. The bullocks are starved for 12 hours before final weighing. The sale price averages nearly 4d. per lb. of the starved live weight, less 5 per cent. This works out at 7d. per lb. dead weight.

The sheep were all of the Rambouillet-Merino breed, but crossed with a little Cotswold. With great folds of skin on the neck, double curled horns, Roman noses, and fleece loaded with suint, the rams present an extraordinary appearance. The sheep shear on the average $14\frac{3}{4}$ lbs. of wool, the rams from 22 to 26 lbs. It was curious to notice that the sheep, in common with other classes of stock, seem to have no wish to stray. There were very few fences and even the corn was unprotected. It seemed as if here and throughout Hungary the stock are dominated by love and kindness. The only wire fence on this estate was around a meadow used for horses, the fence being made visible by wreathing with straw bands, these being in some cases white-washed over.

The farming land being four-fifths arable, there is a succession of green crops grown to provide fodder for the stock. Earliest in the year comes rye, then winter tares and rye sown together, then winter barley and peas, then wheat and winter peas, and lastly maize. In addition, there is a fodder crop new to English farmers in Mohar-grass (*Setaria Germanica*), the same that is grown in America under the name of Hungarian grass. It is sown in May and cut in August, stands drought well and produces 28 to 42 cwts. per acre (green weight). For hay it is customary to sow 28 to 31 lbs. of seed, for seed 18½ lbs. per acre. For a three years' lay a mixture of cocksfoot, timothy, French oat grass, and red and white clover is sown. The same mixture is used for orchards.

It is customary to let out the harvesting and threshing to peasants for 10 per cent. of the crops, or it is paid for by piece work, in which case 4s. 1d per acre is paid for cutting and 7d. for setting up, together with 12 lbs. of wheat meal and 12 lbs. of maize meal. A man and wife can cut two acres per diem. In addition to the regular hands employed on the estate, Slavonian labourers from the north of Hungary come from April 1st to November 1st. The men's wages are 8d. per day with board and lodging, the women's, 6d. The lodging is provided in a barn and the board consists of peas, rye bread, separated milk and pork fat. Military discipline is observed, a small regiment of labourers (52 men and 34 women) were noticed marching two and two to their work in the fields with hoes on their shoulders, while, at another point, 22 women were seen in echelon hoeing potatoes with triangular hoes, superintended by two male overseers; even children were seen going to the school, after attending mass, in military order.

The table of particulars on page 154 was supplied to each member of the party.

Six hours had been occupied in driving round the estate, and luncheon in the casino was a most welcome meal. Time permitted only two toasts (1) the Minister of Agriculture and (2) Colonel Fadlallah, Mr. Ruisz and the other officials, but these were honoured with the greatest enthusism. The carriages were now ready and in these a start was made for the long drive to Kisbér, which afforded distant views of an immense expanse of cultivated country as far even as the Primatial palace of Pannonhalma, the first abbey founded in Hungary, on a height above the Danube. The drive was not without excitement, for the horses, still absolutely fresh, tore at a tremendous speed along tracks which gradually faded until at last they were crossing a wide grassy trackless plain. At length after a good hour's drive the confines of the Kisbér estate were reached.

THE STATE STUD FARM, KISBÉR.

A stop was made at this point to see the three-year-old mares of the Kisbér stud. These were got by English thorough-bred stallions for five or six generations and were, therefore, nearly pure thorough-breds. Passing through the one large stable in which they were all kept, a sort of ring corral was reached, some 600 yards round, into which the mares were presently turned loose. At the word "go" from the chief and a crack like the report of a pistol from the long whips of the blue shirted "csikos" who led them (the sound of which no doubt accustoms horses to the sound of rifle firing), the mares first broke into a trot and then into a full gallop round the ring (fig. 17). Round and round they tore at their hardest in a compact body, shaking the ground as they passed—a natural horse race, exhilarating and exciting. And yet they were completely under control; the gallop was reduced to a trot and the mares then brought to a standstill in a circular group; round this the csikos trotted, setting the mares also in motion until the whole 173 revolved like a wheel on its axle. It was a wonderful sight and the scene can never be forgotten by those that witnessed it.

A fresh lot of carriages were in waiting, and in these, drawn by spirited horses which needed experienced driving, the journey towards Kisbér was pursued for a further stage. An extensive vineyard on sandy soil was passed, in which was to be found every kind of vine on separate plots distinctly labelled, this being one of the centres from which vine stocks are distributed to wine growers (page 21). Next the piggeries were reached. In a meadow adjoining were a herd of 360 pure-bred Berkshires and cross-bred Mangolicza-Berkshires, and 152 fat hogs (fig. 19). The pigs are kept separate from the horses on the estate as the latter will not feed on the pastures upon which pigs have been herded. The piggery consisted of a large shed containing four rows of sties and two gangways, and contained some dozens of sows with large litters. The place felt too close, but the sows and their litters were let out daily and appeared healthy. They were being fed with middlings and maize meal.

Continuing the journey and paying *en route* brief visits to farmsteads where more horses and cattle (467 fat bullocks of 15 to 17 cwt. live weight) and sheep were to be seen, the party reached a Government dairy school (fig. 20). The entrance was upon the first floor, in which were two rooms for butter and cheese-making and a milk-testing room. In the basement were the cheese store and butter store and a small engine for working the Holstein churns and separators. The cheeses made were "Kincsem," "Csemege" and "Romadour." There were less than a dozen students, the thorough training of a few skilled dairy hands being apparently the object aimed at. The milk was obtained from a herd of 110 Simmenthal cows in an adjoining cowhouse.*

Kisbér was now drawing near. Twenty-three carts, each drawn by four oxen, were passed conveying manure from the town to the fields. Nearly 40 miles had been covered during the day, not a mile of which was on a hard road, but the two lots of horses used (96 in all) maintained the same high speed throughout the journey and displayed a stability which surprised everyone. On arriving at Kisbér (figs. 21 and 22) the party were billetted at the house of the director, in the officers' quarters at the "castle" and in the casino. An excellent dinner, enlivened by gipsy music, was served in the casino. Major Deseö, the commandant of the cavalry regiment stationed at Kisbér,† and Dr. Bendl, the civilian director of the estate, presided, and, long as the day had been, the health of these two gentlemen and the other officials could not have been more heartily responded to by their English guests.

Thursday, May 22nd.

The estate of Kisbér formerly belonged to Count Batthyany and was purchased by the Government for use as a stud farm in 1868. It has been already stated that each of the State farms is devoted to certain particular types of horses and cattle. The ideal of the Government both as regards

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*Ignorance of the Hungarian language was occasionally a source of trouble. On entering this shed, the attendant had said a Hungarian word to each member of the party. After leaning upon the rail at the back of the stalls to admire the excellent cattle, it was painfully obvious to everyone that the translation of the word was "Wet Paint!"

†The whole work of the stud on all the State farms is performed by soldiers, who serve their three years in this way. Not alone does the utilization of cavalry regiments for this purpose enormously diminish the cost of the stud farms to the nation, but it provides a splendid training in horse breeding to the men, who on returning to their own farms are able to make use of the knowledge they have gained.

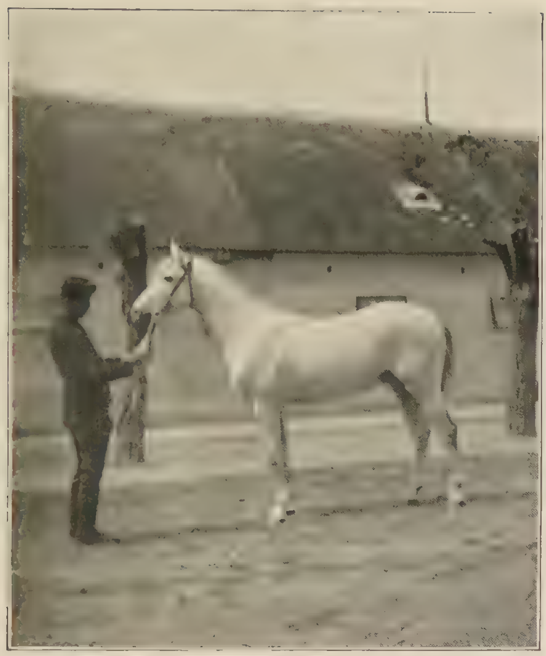

Fig 13. Thorough-bred Arab stallion in Royal Hungarian stud at Bábolna.

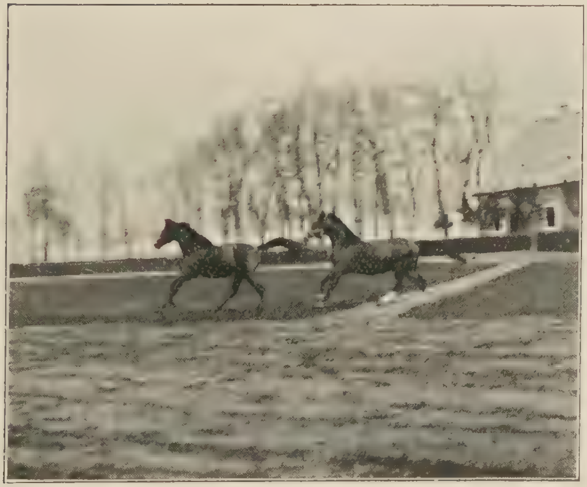

Fig 14. Half-bred stallions cantering, shewing Arab action; at Bábolna

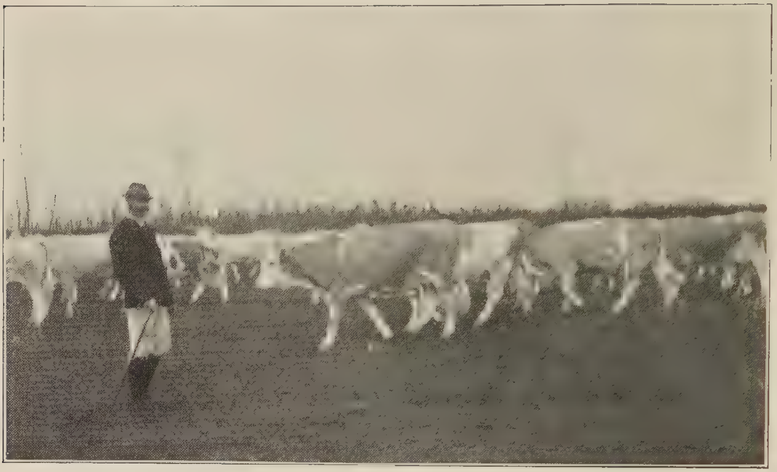

Fig 15 Young Simmenthal cattle at Bábolna.

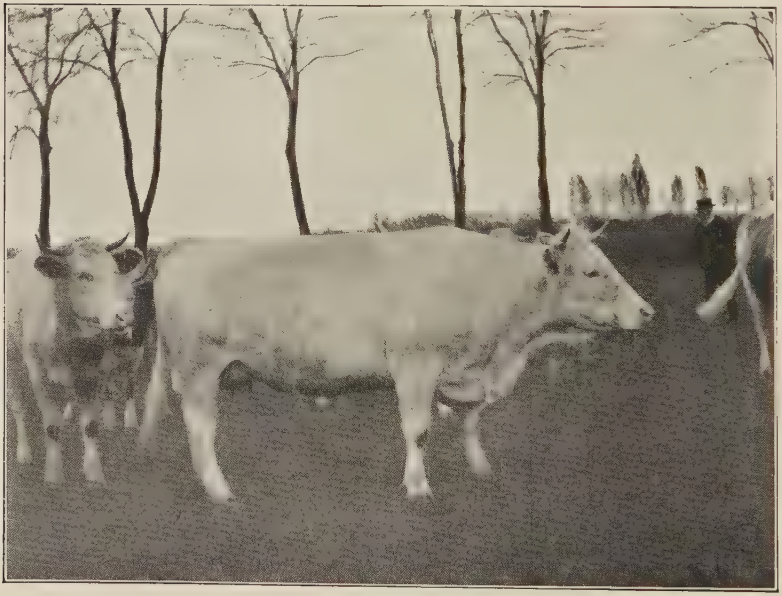

Fig 16. Simmenthal cows at Bábolna.

cattle and horses is to breed one kind only in a district. This tends to keep the breeds pure, it economises the sires, and buyers know what district to go to for what they want. The Government decides upon the best kind for each district and the county furnishes particulars to the farmers as to where the sires can be obtained. The sire belonging to a private owner may not be used by his neighbours unless registered. The system is already in full practical working as regards cattle and is being made so as regards horses, and there are now as many as 3,600 registered stallions owned by the State in the country, which are available for public service at fees from 6s. to 10s.

The particular breed of horses which the stud at Kisbér is engaged in rearing is English thorough-bred and half-bred, and in the stables which were visited during the morning were seen 14 magnificent English thorough-breds, 13 of which had been imported from England, and one from France. Among the best known were Culloden, History, Galipard—a winner of the Hungarian Derby, Bonavista, Kozma, Culcock, Velour, Bonymore, Dunure, and Gallia. For Bonavista as much as £17,000 was paid. The fees for service, *i.e.*, the amounts paid by breeders for mares sent to Kisbér, vary between 12 and 80 guineas. Mares are even sent from England, and would appear to be excellently well cared for. The mares reared on the estate are tested at three years old for speed and temper, and if not satisfactory are not bred from. The yearling thorough-bred stallions were to be sold on the day of the visit. The reserve price was 100 guineas. The highest price obtained for a yearling bred at Kisbér is £1,500.

From these thorough-bred stallions have been bred the Kisbér stud of half-breds. The secondary stallions are used in the district by the small farmers at a fee of about 8s. per service. Not a single horse in the whole stud was seen either in bad condition or badly groomed.

The mares and foals were housed each in its own reed-thatched cottage with a paddock of about 6 poles adjoining, from which a gate led into the meadow. Against the door of the cottage was a dung pit, covered with a lid on hinges. Over the front door was painted the name, pedigree, and other particulars of each mare. There were 18 or 20 of these cottages and paddocks in a row along the side of the road, and the whole had the appearance of a pretty village street. Altogether there were 177 mares and 144 foals in stud.

In order to breed a heavier type of horse for farm work there are, in addition to the thorough-breds, a few Flemish stallions (one of which is 23 years old) kept for crossing with Hungarian mares. It was noticed that the half-bred mares (numbering altogether 60) were at work in the fields, while their foals were shut up in the stables.

At Kisbér, as throughout almost the whole of Hungary, Hungarian oxen are used for purposes of draught. In one field as many as 13 teams of 4 oxen were seen ploughing. Other teams were observed carting soft sandy material, containing a little stone, for road mending (fig. 23). Some of these had extraordinary horns measuring 6ft. 6in. across the tips. On the stud farm they begin to work when three or four years old, but the peasants use them earlier. They are quick walkers, hardy and strong, and most economical in their keep. During the winter, when not working, they do well on a diet of maize straw chaff. For these qualities it is suggested that this breed should be tried in South Africa, where such hardy trek oxen would probably resist disease better than improved breeds. It is singular that these Hungarian cattle should be practically identical with the native English cattle, now almost extinct, the few survivors being known as the Chillingham herd. The Hungarian cows are useless for milking purposes, and the dairy cattle bred on the estate are Simmenthal. Of these a remarkable lot of fat bullocks were seen, several of which weighed over a ton, while one weighed exactly 21 cwt., and measured 2ft. 6in. across the hips, and stood 5ft. 7in. high. The rations for these consisted of beet-pulp silage, oil cake, maize meal, and coarse cut chaff (1 to 2 inches long), all mixed together. In the stables, sticks painted with resin and oil, were hung up to the beams to catch the flies, and were obviously efficacious. A ledge was nailed beneath the joists, partly to encourage swallows, which were wonderfully familiar and tame, to build in the stable and partly to prevent the droppings falling on the cattle. Martins were numerous under the eaves outside ; there were scarcely any house sparrows.

The soil of the estate appears to be exceedingly fertile. The crops were splendid—fields on fields of wheat, maize and rye for seed, and beetroot. There were also some fine hay crops, which were being cut by hand (by means of light scythes with straight handles); in one field there was a gang of 34 men mowing in echelon formation, and 113 men and women in another field singling beet. Some of the soil was a very dark medium loam, and should be splendid for potatoes, but few were seen upon it, and what there were were mostly used for starch making, there being a factory on the estate capable of turning out 120 tons per day. Much of last year's green maize had been siloed. The silo consisted of a pit in the ground about five feet deep. In this the green maize was heaped till it formed a clamp four feet high, then allowed to heat to 113° Fahr., when the earth which had been dug out was spread over the top till it formed a covering 2ft. 6in. in thickness when well solidified. The ensilage as used (in May) appeared to be excellent fodder, the smell was not disagreeable and the cattle enjoyed it. Potato-pulp from the starch factory and beet-pulp from the sugar factory is siloed in the same way.

The ploughs are roughly made and resemble a Kentish plough—a fore carriage running on two wheels, on to which was hooked a short beam with share attached. They seem difficult to guide and it is rare to see a straight furrow. Sometimes two or even three furrow ploughs are used, a great economy of labour.

The morning at Kisbér had been rendered the more interesting by its being market day. At a very early hour the oxen-drawn carts of the peasants had come lumbering into the town conveying themselves and their goods. The women, brightly dressed in blue spotted blouses and skirts, blue handkerchiefs over their head, and top boots, had perhaps a pig for sale, tied with a string to the hind leg, or a pair of ducks (fig. 18), or goslings, sixpennyworth of vegetables or eggs; others had wood or wicker baskets of home manufacture. The tradesmen's stalls were provided with dress materials and hardware and earthenware, but all very cheap, and everything pointed to the peasantry being thrifty but poor. At 8 o'clock the market place for a time was quite deserted, everyone going to the service in the catholic church.

The elementary school was in the market place (fig. 25). The teaching was in Hungarian, but the titles of the pictures and diagrams were in German, and the furniture was not equal to that of our English village schools. Full attendance from six to 12 is compulsory and the children remain half-timers till 14, but it is questionable how far this is enforced, for children of school age were seen working in the fields with their parents, and it is admitted that 10 per cent. of the population cannot read. The difficulties of regular attendance are doubtless almost insuperable when the distances are very great; several times waggon loads of children were seen being drawn to school by oxen. It may be assumed that all voters are educated. To acquire a vote, a man must be 24 years of age, have no record of crime, and pay £2 in land tax. These restrictions reduce the number of voters to about 1½ millions, or 9 per cent. of the population.

After lunch at the Casino, when the warmest thanks of the party were expressed to the Government and Officials, for the hospitality shown, the party were driven to the station, where half the town seemed to be assembled. An introduction here took place to Mr. Pál Kiss, the parliamentary secretary in the ministry of Agriculture, who had come to Kisbér, in connection with the sale of yearlings. The branch line, upon which Kisbér is situated belongs to a private company, and in common with most of the Hungarian branch railways which belong to the State, is built for cheapness and not for speed. The curves are sharp, the gradients considerable, the line a single one, so that while cheap carriage is attained, against this must be set the disadvantage of slow travelling, the speed between stations on the branch lines being limited to 13 miles an hour.

The main line between Vienna and Budapest was joined at Komárom, a fortress finely situated on the Danube, and called "the Virgin," because the place has never been captured throughout the millenium of the Hungarian kingdom. In the river were moored numbers of barges, each fitted with a water wheel and used for grinding corn and other purposes. From here the journey to Budapest was through very attractive mountainous country, with villages and farms below in the valleys, vineyards (many of them destroyed by the phylloxera and only partly replanted) on the hillsides, and rocky heights above. On one of the heights was an enormous figure of an eagle with outstretched wings, erected in 1899, when the Hungarian millenium was celebrated. At Tata, a coal mine, worked by galleries into the mountain side. was passed, and shortly afterwards the Danube was reached and a fine view of the spires and domes of Budapest was obtained in crossing the railway bridge to the Eastern station.

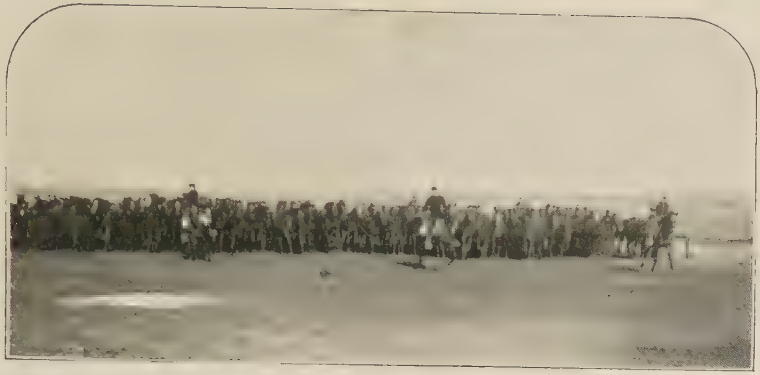

Fig 17 State stud-farm, Kisbér ; 650 two-year-olds galloping round the ring.

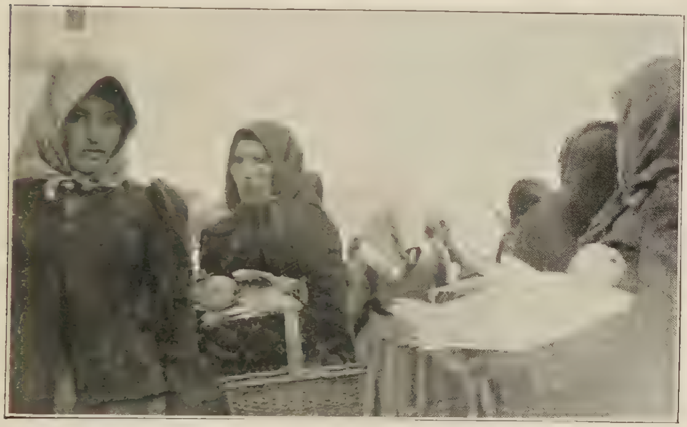

Fig 18. Hungarian peasant women marketing poultry at Kisbér,

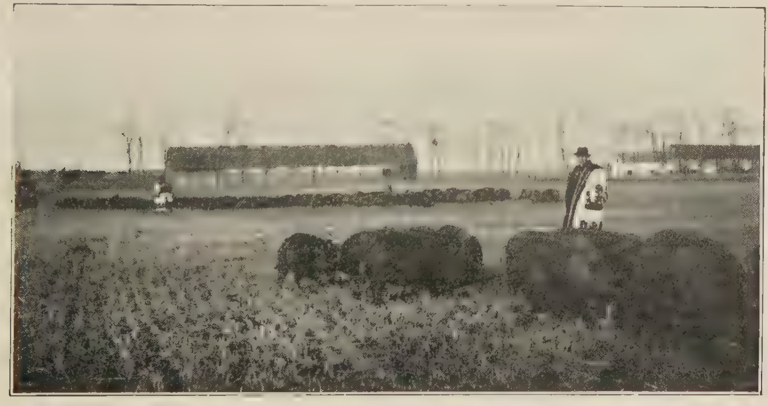

Fig 19. Berkshire pigs with Hungarian swine herds, and barn ; Kisbér.

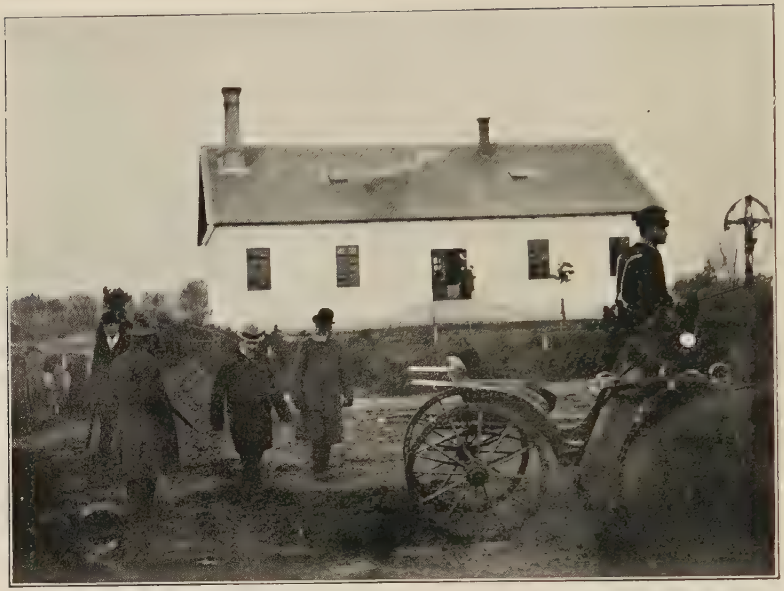

Fig 20. The dairy school near Kisbér

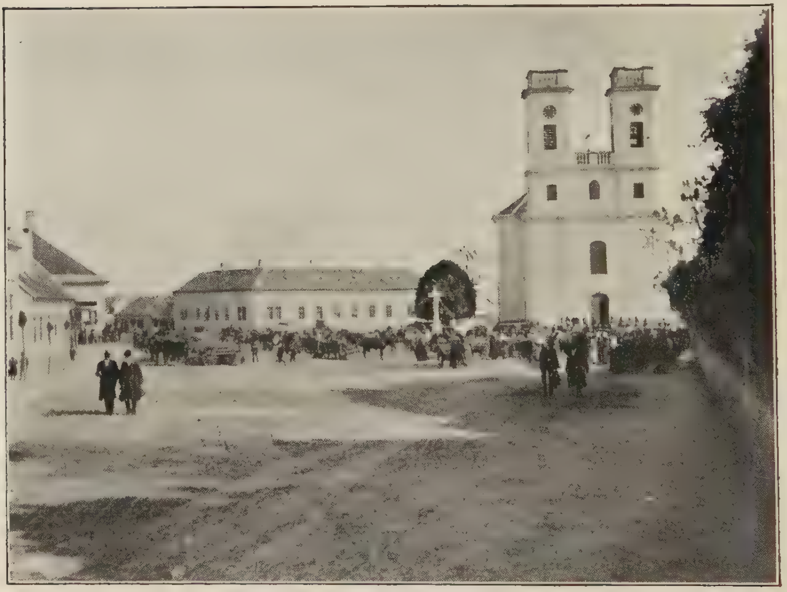

Fig 21. The market place, Kisbér.

BUDAPEST.

The Hotel Hungaria at Budapest, where the party put up, is grandly situated on the Danube. The river, here 600 yards wide, is enlivened by steamers and ferry boats, and the banks are busy with the loading and unloading of the great river barges mostly freighted with corn. Beyond rise the heights of Buda, crowned with the gilded domes of the Royal Palace. To the left is the Gellért Hill, a rugged cliff that rises precipitously 400 ft. above the river, surmounted by the ruined citadel round which have surged many of the bloody conflicts in which the brave Magyar nation has been involved. Beyond again are the mountains. Between the hotel and the river is the Corso, daily crowded with a fashionable throng.

The Hungarian renaissance manifested in all parts of the country by the erection of new public buildings is no where so marked as in Budapest. Within the last half century the city of Budapest has been almost entirely re-built in palatial modern style, and its distinctive Hungarian character is consequently almost gone. Some of the finest new buildings in the city are municipal enterprises. It is noticeable that the Hungarians have no objection to national and municipal trading. Being not inclined to commerce themselves, they rather rejoice to have business taken from the hands of Germans and Jews. It was satisfactory to find some evidence in the city of the use of articles of English manufacture. On the quay for example were noticed a dozen sets of Ruston and Proctor's threshing tackle and a machine of Clayton and Shuttleworth.

Dinner was served in a large annexe to the public restaurant of the hotel, which, during the stay in the city was almost monopolised by the party, and a move was then made in 20 pair-horsed carriages reserved for their use to—

THE CENTRAL CO-OPERATIVE CREAMERY.

This society was established in 1888 to provide a permanent market for dairy produce and the public of Budapest with good milk. It consists of 98 farmers who hold 450 £42 shares. Each share carries the right of sending the milk of 15 cows. The cows at present number 6,000, all of which are warranted tubercle-free. The farms in some cases are as much as 200 miles away. The farmers are paid 5d. to 6d. per imperial gallon clear of all expenses, and the profits are divided annually. That these are considerable is evidenced by the fact that the £42 shares are now worth £100. The milk received daily amounts to 9,000 gallons, and the total amount paid to the members last year for milk amounted to £79,000.

Forty-five shops in Budapest sell the produce. Milk containing 3·8 % fat is sold for a little over 1½d. a pint. In addition there are sold daily about 1,500 gallons of separated milk, 130 gallons of cream and 150 gallons of "coffee cream" (containing one third cream). About 2.700 gallons of milk are separated daily for butter, 727 gallons made into cheese, and 110 gallons of separated milk made into a skim-milk cheese which is sold at a low price.

The milk is received at 11 a.m. and 10.30 p.m. The whole of it is filtered. The portion required for cream and butter is heated, passed through two Alpha separators, each having a capacity of 500 gallons an hour, and cooled by means of four coolers having a capacity of 900 gallons an hour. The milk is sold in bottles. The plant for cleansing the bottles is very complete. First, they are soaked by passing on a travelling rack through a vat of warm soda solution, then brushed out with a rotary brush through which water is squirted into the bottles and finally placed on perforated pegs on a revolving cone-shaped table. On turning the table a quarter of a circle, water automatically flows into the bottles, while on turning another quarter the flow ceases. There are about 160 pegs, and thus while 40 bottles are being placed on the pegs, 40 bottles are being rinsed, 40 bottles are being removed from the pegs, and 40 pegs are free. The bottles are then filled by the well-known automatic syphon fillers, stoppered (not very efficiently), wired down, lead sealed and stamped. Further particulars are given in the memorandum on page 156.

In the department of the creamery devoted to the preparation of humanized milk, Dr. Herzfeld, chemist to the creamery, gave a full and most interesting exposition of the Székely and Kovács patent method. The milk heated to 140° Fahr. is run into a bomb into which carbonic acid gas (from a bottle of liquid carbon-dioxide) was forced under a pressure of 30 atmospheres. This not only kills all micro-organisms without further heating but precipitates and coagulates the casein. The milk is then forced through a filter by the pressure of the dissolved gas, the gas escapes, and sugar and cream are then added in the quantity necessary to produce milk of the right composition. The apparatus had a capacity of 52 pints an hour. The humanized milk was sold at 3d. per pint.

The President of the Society, Baron Harkányi, and other directors and officials had most kindly acted as conductors and fully explained the whole working of the establishment; but their hospitality did not end with this, for the party were lastly ushered into a room where a sumptuous champagne supper was spread, and here the proceedings, which included many a cordial expression of good fellowship between the Hungarian hosts and English guests, were kept up to a late hour. On returning to the hotel each member of the party was handed an invitation from the Municipality, printed in English, to a banquet on the following Saturday evening.

Friday, May 23rd.

CENTRAL MARKET HALL.

At eight o'clock next morning, the party were received at the Central Market Hall by the directors and secretary of this establishment, of which full particulars will be found on page 157.

An inspection of the Market Hall revealed many excellent arrangements. Adjoining the quay on the river, produce could be brought direct from the barges into the basement, which included large cold storage chambers, and from which electric lifts raised it to the floor of the hall or to the galleries above. Each kind of produce was confined to a particular section, meat, fish, vegetables, poultry, flowers, fruit, &c. The fishmongers kept large quantities of small fresh-water fish alive in tanks; there were also larger dead fish, including sturgeons from the Danube and the Theiss, seven feet in length. The hall had a very festive appearance, being decorated with Hungarian and English flags. Over a floral arch was inscribed "You are welcome, English guests" and a butcher had decorated a side of bacon with a similar inscription.

HUNGARIAN FARMERS CO-OPERATIVE SOCIETY FOR SUPPLYING THE MARKET HALL.

In the basement and gallery of the Market Hall were the premises of this Society. One branch of the Society's activity is the collection of eggs for export, and in the basement eggs were being tested, sorted and packed for the London market. For testing, the eggs are placed in a frame placed over a number of incandescent electric lights, by which any bad eggs are revealed by their want of transparency. They are then sorted into three classes (1) "good" which are alone exported; (2) "doubtful" which are sold for cooking in the town; (3) "bad" which are thrown away. The export eggs are packed tightly in overlapping rows, with the big end downwards, in boxes padded with shavings. The boxes, which are divisible into two halves to suit the London buyers, each hold 10 gross. These eggs, which are sold as "Aurora" brand, fetch 6s. per 120 in London, a price very much higher than that obtained when exported through German merchants. During the first four months of the present year the value of eggs exported by the Society to England and Germany amounted to £12,500. The farmers are advised of the price and are paid for the eggs sent each week; the present price paid is 5d. per dozen, so that the cost of collection in Hungary, packing in Budapest, and transit to London is only 2d. per dozen. The sphere of the Society's work includes the collection of all kinds of country produce for market supply in Budapest. Further particulars are given on page 158.

THE ELEVATOR.

A few hundred yards below the Market Hall was the Elevator, a large building rented from the Municipality by the bankers and financiers for storing and cleaning grain for the farmers and selling it for them to the best advantage. It appears that, contrary to the English custom, farmers do not sell their corn on the market, but buyers or merchants go round the country to buy. It is obvious that the system under which the elevator is worked is much more advantageous to the farmer, though the expenses of working are said to be too high to render it as generally adopted as should be the case.

The grain is brought direct to the elevator by rail and river, and from the trucks and the barges (which resemble elongated Noah's arks) is raised to the top floor by the familiar machinery. The plant for cleaning includes a series of five aspirators, screens, and perforated cylinders, automatic weighing machines, machinery for grading, and indiarubber carrying belts which, though in use 20 years, are perfectly good still. The produce of cleaning wheat and barley was divided as follows:—(1) First quality, (2) second

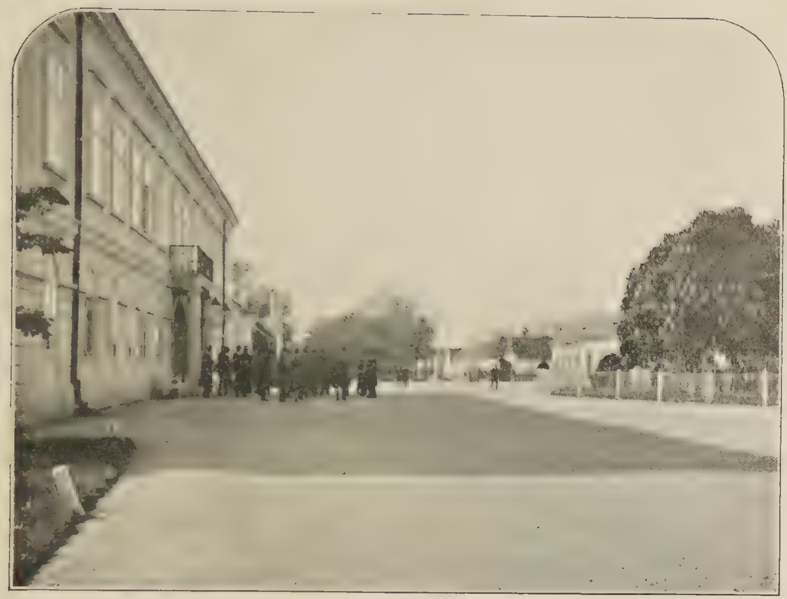

Fig 22. The staff-headquarters, Royal Hungarian stud, Kisbér.

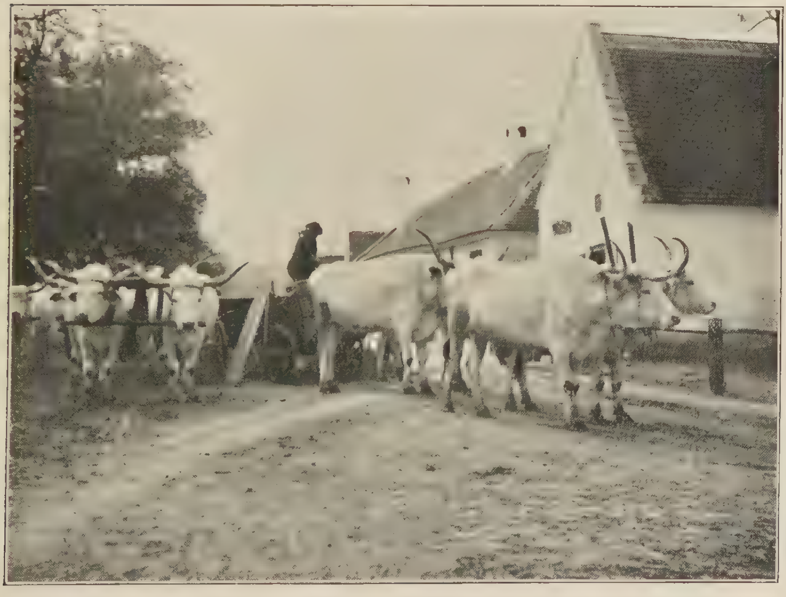

Fig 23. Hungarian draught oxen used in road mending, Kisbér.

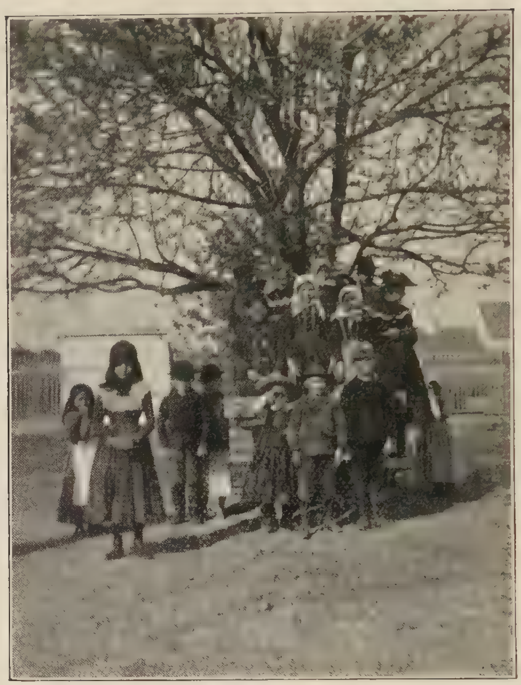

Fig 24. Group of school children.

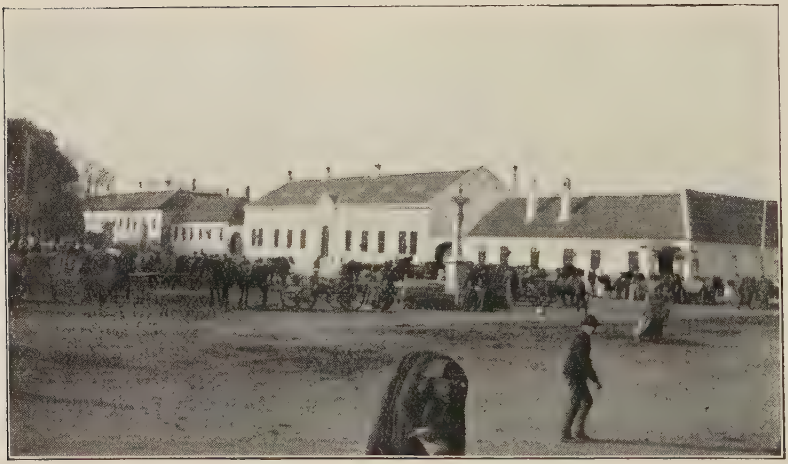

Fig 25. The elementary school, Kisbér.

quality, (3) third quality, (4) tares, (5) smut, (6) chaff, (7) foreign matter (string, wood, stones, maize, etc.). The storage capacity of the elevator was a million quarters. The memorandum on page 160 gives further particulars.

THE NATIONAL AGRICULTURAL SOCIETY.

The next item on the day's programme was a reception by the President, Count Dessewffy, and members of the National Agricultural Society, in the fine new meeting room at Köztelek. The party were introduced by Mr. Zoltán Szilassy, Secretary to the Society, and received a most courteous and warm welcome from the President. Mr. E. A. Fitch, in his reply, acknowledged the kind invitation, the admirable preparations the Society had made for the reception of the party, and the warmth of the welcome. Afterwards, Mr. Ödön Miklós formerly Under Secretary of State in the Ministry of Agriculture, gave a description of the progress and activity of the Society. The account of the Society's work on page 160 and the following pages will be read with interest, as shewing how beneficent is the admirable influence of this organization.

RECEPTION BY THE MINISTER OF AGRICULTURE.

The party now drove to the Houses of Parliament where they were received by His Excellency Dr. Ignatius Darányi, Royal Hungarian Minister of Agriculture. Having been presented by Mr. György, Alderman Fitch expressed, in a few happily chosen words, the feelings of warm appreciation and gratitude that were felt for the very hearty reception and magnificent hospitality that had been given, and the care and thoughtfulness which His Excellency had bestowed on the arrangements, in order that this party of British farmers might have an opportunity of studying all that was best worthy of their investigation.

The Minister made the following reply :—

> Your visit in Hungary affords me much pleasure. The attention and hospitality which you will call forth all over the country is only a small return for the good feeling and friendship always shown to our compatriots by Old England.

May you carry home with you a happy remembrance, and may your stay here serve to make agriculture in Hungary still better known in your great country, and to strengthen the deep sympathy which long exists between us.

Several introductions were then made, and everyone was impressed by the courtesy of the Minister upon whom the industrial progress of the country so largely depends, and whose influence for usefulness is so far-reaching.

CO-OPERATIVE CREDIT BANK.

Some of the party now visited the offices of the National Central Credit Co-operative Association. They were received by Mr. György, Dr. Etienne Bernát and some of the officials who gave an interesting account of this organization, which has already done much to improve the condition of the peasant farmers.* The particulars given on page 167 were supplied.

PUBLIC BUILDINGS.

Overlooking the river at the North end of the city, is the new Palace of Parliament, built at a cost of £2,500,000 (fig 26). It is impossible to describe the splendour of the interior of this building. The great marble staircase, the striking historical frescoes in both houses of legislature and in the lobbies, the profusion of gilded carvings, the painted ceilings and the wonderful view from the terrace on the river, leave an impression of oriental magnificence that seems to belong to dreamland rather than fact. Opposite the Parliament House is the Ministry of Agriculture, a great pile standing in the most important position next to that of Parliament itself. On entering, it turns out to be a perfect warren of offices, with many hundreds of secretaries and clerks, engaged in the varied work of the Agricultural Department. Adjoining are the Royal Courts of Justice, with a noble entrance hall and staircase.

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*It was my privilege to attend a meeting of the Local Credit Society in the village of Peterfalva. About a dozen peasant farmers were present who described, and took an obvious pride in describing, the work of their Society. A peasant was the treasurer and the Presbyterian clergyman the secretary, indeed the peasants were too illiterate to undertake the book-keeping part of the work. According to the account given me, the peasants had, previous to the establishment of the Society, been in debt to the usurers (Polish Jews), who charged them 20, 30, or even 40 per cent. interest on loans, but were now practically free. The interest they now pay is 6 to 7 per cent. For every loan to a member, two other members had to go surety, so that loans would not be given to the thriftless. There had been no single case of defalcation. The independent upright manner of the men was most marked, indeed though poor they were with one exception "nobles," and were proud of their nobility.—THE COMPILER.

CENTRAL MODEL WINE CELLARS.

After inspecting the foregoing public buildings the party were received in the Central Wine Cellars by the President and directors. The object of this co-operative organisation, as explained in the particulars given on page 176, is the promotion of the vine growing industry, and the Government assist by granting them the free use of the cellars beneath the Agricultural Ministry. The cellars which are of great length were filled with wine, from the light wine of the Plains, some of which was as cheap as 1s. 2d. per gallon, to the strong and costly wines of Tokay. In one of the long, narrow, cool galleries, an ample luncheon was served, to which at least a hundred persons sat down, and the tables were loaded with the various vintages. Very excellent many of the wines proved, refreshing and stimulating without being intoxicating, and although the air of a wine cellar is known to have dangerous properties, no one on leaving the cellar felt the smallest ill effects. It was surprising to find the Society had no agent in England. Speeches followed luncheon and a very hearty vote of thanks to the President and the Society was carried with musical honours.

The party then drove to the Eastern Station to take train for Gödöllő, a journey of three-quarters of an hour.

THE ROYAL DOMAIN OF GÖDÖLLŐ.

Gödöllő is the Windsor of Hungary. The Chateau, surrounded by beautiful gardens, was the favourite residence of the late Queen Elizabeth, and the neighbourhood affords charming drives and excellent sport. At the dairy farm of the estate were 80 Pinzgau cattle, imported from the well-known valley in the Tyrol, but their average milk record only amounted to 10½ pints a day, and they did not appear to possess any advantages over the similar Swiss breeds.

In memory of the beloved Queen and her tragic fate at Geneva, a public park has been opened near the Chateau, in which is her statute in bronze. On the return from the dairy farm, Aldermen Fitch and Russell, the one as representing a party of Englishmen and the other a party of farmers, laid wreaths at the base of the pedestal, the little ceremony being witnessed by a number of people from the neighbourhood.

Driving from here to the poultry farm an excellent display was witnessed of the cattle, sheep and swine, which were driven up to the road side of the pasture on which they were feeding. The poultry farm and school (fig. 33) is still in an experimental stage and it is too soon either to praise or criticise. In the store of poultry appliances, were all kinds of incubator and an egg-testing contrivance in which the eggs fall into the meshes of an endless webb, and are then carried over the electric lamps, thus saving the trouble of placing them in the wire frame by hand. The printed particulars supplied will be found on page 168.

The bee-farm and school (figs. 32 and 34) has passed the experimental stage and is a very interesting place (see page 169). It has an area of 60 acres, and the land is mostly taken up with the cultivation of plants and trees useful for providing honey. Every style of hive is here to be found, the number being over 300. The large bee houses have a room behind, separated from the hive proper by a plate glass screen, so that a complete study can be made of the work of the bees (fig. 35). The employés seem to be very expert and a small hive was taken to pieces before the company without scaring the bees, the only precaution being a whiff of cigarette smoke before beginning. There was a botanical garden of plants suitable for cultivating for bee food in which the following plants were noticed :—

List of plants suitable for bee culture.

Althæa rosea.
Anchusa gigantea.
Anthyllis vulneraria.
Artemisia hortensis.
Artemisia vulgaris.
Borago officinalis.
Brassica alba.
Campanula *sp*.
Carduus Marianus.
Centaurea Cyanus.
Dipsacus Fullonum.
Dracocephalum moldavicum.
Echium plantagineum.
Echium vulgare.
Fœniculum capillaceum.
Hyssopus officinalis.
Lamium purpureum.
Lathyrus odoratus.
Lavandula vera.
Lotus corniculatus.

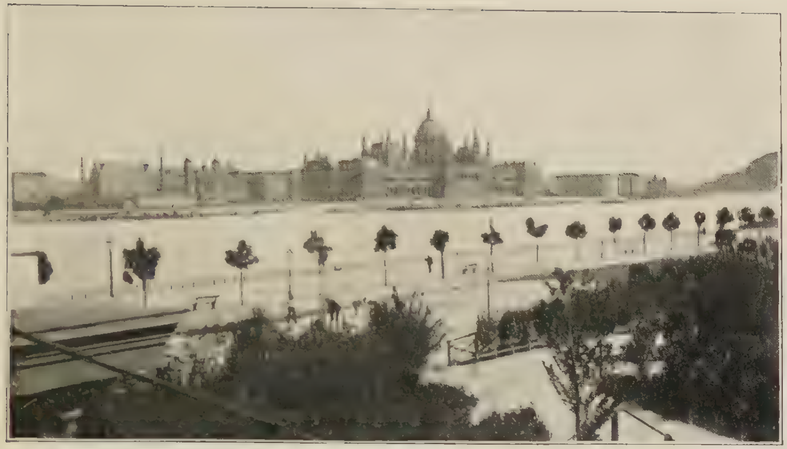

Fig 26. New Houses of Parliament, Buda-Pesth, with (to the left) the Ministry of Agriculture, the Courts of Justice and the Roller Flour Mills.

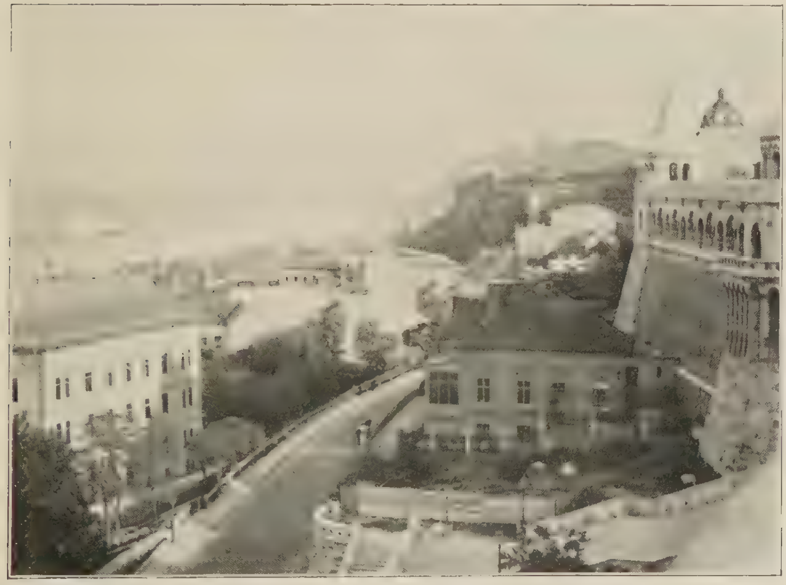

Fig 27 View of Buda-Pesth from the Matthias Church, looking south.

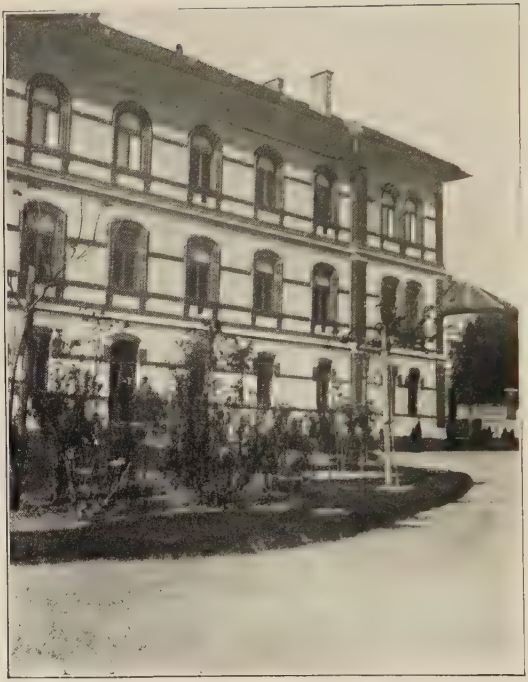

Fig 28 Royal Veterinary College, Buda-Pesth.

Fig 29. The Royal Palace at Buda, from the steamboat quay at Pesth.

Marrubium vulgare.
Melilotus alba.
Mirabilis Jalapa.
Onobrychis sativa.
Origanum Majorana.
Papaver somniferum.
Polygonum fagopyrum.
Prunella grandiflora.
Reseda odorata.
Ruta graveolens.
Salvia officinalis.
Satureia montana.
Stachys recta.
Teucrium *sp*.
Trifolium incarnatum.
Thymus vulgaris.
Urtica dioica.
Verbena officinalis.

A homely and refreshing tea was served on a glazed balcony at the school, and each member of the party was presented with two small jars of honey, the one acacia and the other lime, both of which on subsequent trial proved excellent. These were supplied by the Hungarian Apicultural Society, 34, Damjanich-utcza, Budapest, an institution supported by the State, which sells the products of the bee farm. The price of the honey was £3 15s. 6d. per cwt. delivered at the Budapest railway station, and for quantities of over five tons £3 13s. 8d. per cwt. For transport-vessels a charge of 8s. 4d. per two cwt. is made, 6s. 10d. being allowed on return.

The party left amid many kind expressions from Inspector Anton Kovács and the staff and students of the school and were then driven to the station and returned to Budapest by train.*

Saturday, May 24th.

MUNICIPAL SWINE SLAUGHTER HOUSE AND MARKET.

The first business of the following morning was a a visit to this establishment. It was opened on May 1st; since this date no slaughtering has been allowed elsewhere in the town, and thus the whole of the swine brought to Budapest are under the control of the six sanitary inspectors upon the establishment. The ground measures 47 acres, and upon this a very complete series of buildings have been erected for storing and marketing, slaughtering, skinning for leather, dressing, curing, and cold storage. Other buildings are to be added for converting the offal into manure.

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*During the drive from the Bee farm to the station a serious accident occurred, a carriage being overturned and falling upon one of the occupants, Mr. R. H. Eve, whose leg was fractured. First aid was rendered by two members of the party and the patient was removed on a stretcher to a railway crossing near by and thence by rail to Budapest where he was received in the Francis-Joseph hospital, Mr. T. Bradridge stopping with him as long as the party were in Hungary. Everything that surgical skill could do was done for the sufferer and the Minister of Agriculture repeatedly showed his kindly thoughtfulness by sending his secretaries to inquire, but it was the end of July before Mr. Eve, by the help of a steel casing for the injured limb, could travel to England, where progress towards recovery has since been slowly made. His fellow travellers could only express the profoundest grief and sympathy, and they keenly felt throughout the remainder of the tour the absence of a valued colleague.

About 1,300 pigs are slaughtered daily, most of them being fat hogs weighing 200 to 400 lbs. They are brought from the country in railway trucks fitted with two floors, a very practical system. On running from the truck each pig is branded on the back with a number and also tattooed through the skin, so that it can be identified after skinning. The sties into which the pigs are run are separated by a close plank fence, the planks being fitted into slots in iron uprights so that they can be easily taken out and cleansed. The floor is brick.

Adjoining the slaughtering yard is a covered annexe containing pens with ingeniously contrived gates. Each side of the gate rests on hinges, but the handle on each side lifts the gate out of the hinge on that side, so that it can open either way and, in doing so, block the direction in which the pigs are wanted *not* to go. These pens are floored with sand.

The sticking is skilfully performed; in addition to the longitudinal cut used in England, a cross cut is also made. The carcases are lifted by pulleys into huge cauldrons of boiling water and scalded. The hair is then easily removed by hand by means of bell-shaped scrapers. They are then hooked by the hind leg and raised by a crane fixed to a two-wheeled truck running on overhead rails and shoved along till they reach a point where the rails form the bridge of a weighing machine. Shoved further, they reach the openers and dressers, who in a few seconds strip off the lard, which, being nearly six inches thick in some cases, leaves little but skeletons. These are then either packed into trucks for sending away, or, having been cut up, the sides, &c., are removed to the cold storage chambers beneath and cured by a light dressing of salt.

In order to satisfy the taste of a particular market some of the carcases are singed instead of scalded. They are placed on, and covered with, a bed of straw and corn cobs, and a match applied. Measly or suspected meat is cooked under pressure in boilers at a temperature of 230° Fahr. for four hours. It is held that the lard cannot be thus sterilized, and it is sold for lubricating purposes. Every piece of meat before it leaves the establishment is stamped by the sanitary inspectors, even down to the lights and livers. The carcases condemned number on the average about 4 per 1,000. The cost of killing, dressing, and selling is 10d. for each pig, and this is deducted from the sale price paid to the farmer.*

The refrigerating plant is very complete. The cold produced by evaporating ammonia under reduced pressure is used for cooling brine to a temperature below the freezing point of water, the brine being led in pipes through the cold storage chambers. Ice is also made, by immersing in the cooled brine vessels of water, having a surface area about three feet square and six inches thick. The ice is sold to pork butchers at 8d. per lb., as compared with 1s. 10d. charged by the ice trust, an institution which this department of the establishment was started to break. It is proposed to sell ice to the public as well.

After so exhaustive an examination of the processes of this establishment, it needed some courage to sit down to a pork breakfast in the large reception hall, but the excellent cooking of the sausages and other viands, one of which was decked with a "Welcome" in coloured jellies, soon overcame all scruples, and ample justice was done to the fare and to the excellent beer, which formed the appropriate beverage. In the complimentary speeches which followed expression was given to the admiration felt for the inception and excellent management of this useful form of municipal enterprise.

A section of the party visited the huge pig fattening farm at Köbánya, a village in the borough of Budapest. The establishment consists of endless rows of low reed-thatched mud-walled shelters, open to a good-sized run, in one corner of which is a cemented water trough with a sloping side, so that the pigs can get down to lie in the water. The soil is sand, and sand forms the floor of both shelters and runs. Particulars of the farm are given on page 169. The number of pigs being so great, it is not surprising that, in spite of the general cleanliness, the smell was almost overpowering for a mile to leeward of the farm.

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*A proposal has been made to establish a slaughterhouse for Hungarian swine at Fiume, the Hungarian port on the Adriatic, which has a large shipping trade with England

THE AGRICULTURAL MUSEUM.

The next item in the morning's programme was a visit to the Agricultural Museum, temporarily housed in the Kerepesi-út, and containing collections which needed a far larger building for their proper exhibition. The collections include models of farm premises, models of horses, cattle, sheep, and pigs of all breeds, anatomical skeletons, horse-shoes, specimens of useful and injurious birds, models of roots and fruits, all varieties of all kinds of seeds, model of orchard shewing pruning and spraying operations, tools and implements, dairy utensils, models of pumps, engines, agricultural machines and waggons, diagrams to illustrate root-growth, models of garden ridgings for various crops, specimens illustrating soil constituents, specimens of manure, collections of dried agricultural plants and weeds, specimens illustrating produce of crop rotations, models illustrating tobacco manufacture, and collections to illustrate silk manufacture from the cocoon to the finished fabric. As showing how a museum can be made of value from the point of view of agricultural education, the visit was most useful. The attendance of 22,400 visitors last year shows how greatly it is appreciated by the Hungarian agricultural classes.

THE VETERINARY COLLEGE.

Horse and cattle breeding being an industry of such great importance in Hungary, it was to be expected that the Veterinary College would be a well equipped institution (fig. 28). In this it exceeded all expectation, and both as to size and arrangement compared favourably with the R.C.V.S. in London. The lecture rooms, laboratories, dissecting rooms, and museums were splendidly equipped, and there was evidence of good work of a high order being done. To mention a very few of the countless objects of interest,—in the chemical laboratory, use was made in agricultural organic analysis of Berthelot's calorimetric bomb; in the pathological museum there were splendidly mounted specimens of enteritis from swine, and many parasites, which excited the keenest interest of the party; in the anatomical museum was the skeleton of the famous Kincsem, a horse who won 54 races and was never beaten. The students were 300 in number, apparently a good set of men, who gave the party a hearty reception. Further particulars are given on page 170.

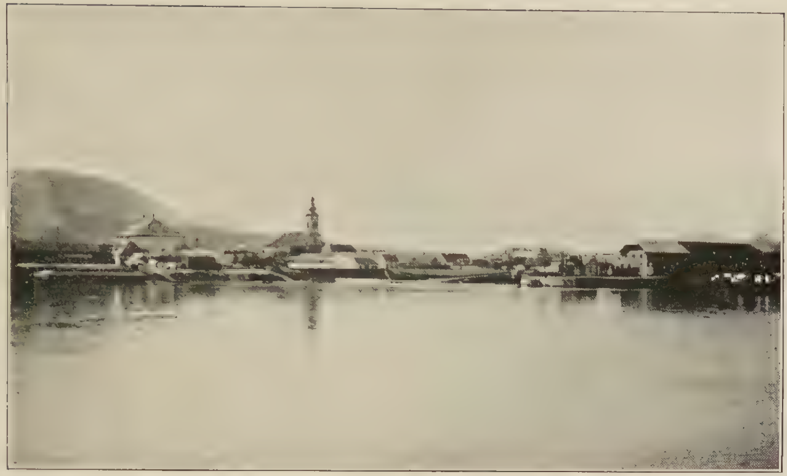

Fig 30. Environs of Buda-Pesth ; view of the village of Old Buda from Margaret Island.

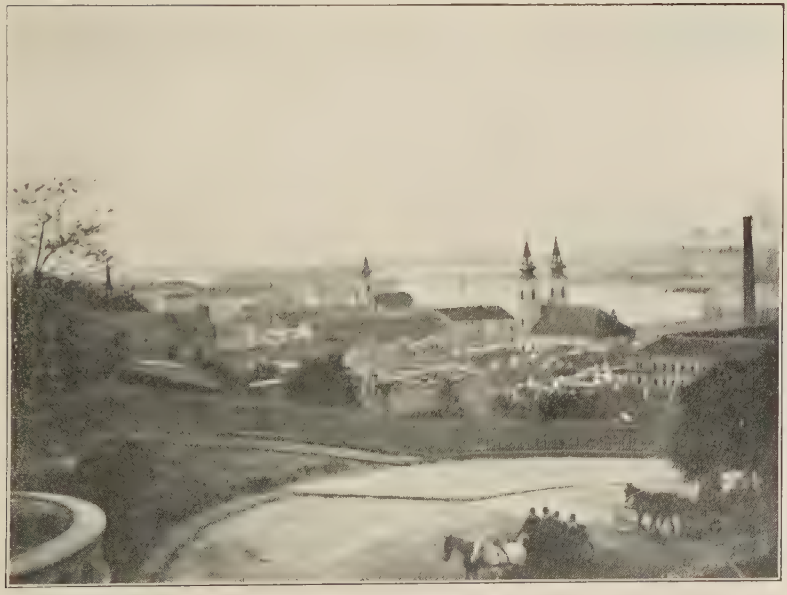

Fig 31. View of Buda-Pesth and Margaret Island from the Matthias Church looking north.

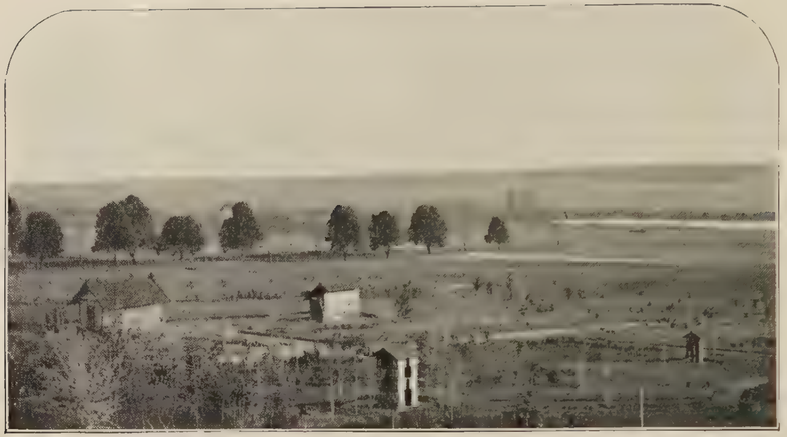

Fig 32. Royal domain of Gödöllő; general view of bee and poultry farms.

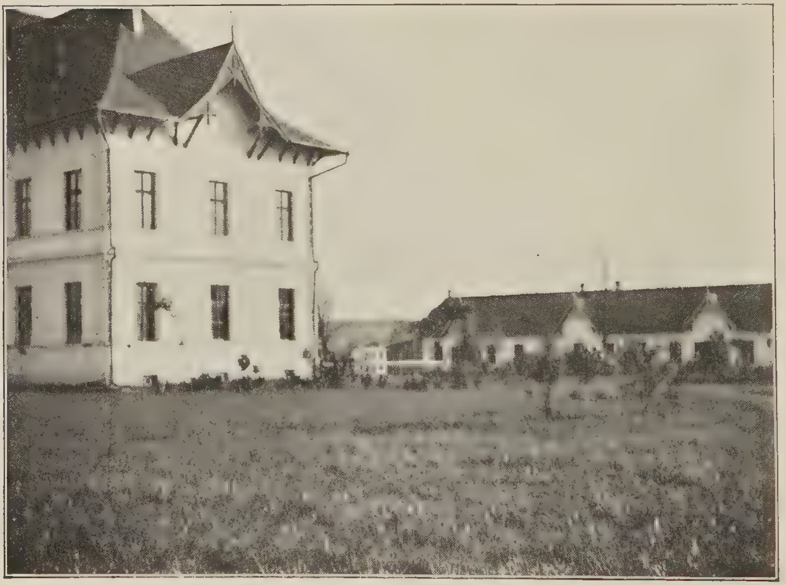

Fig 33. Poultry farm and school, Gödöllő.

Attached to the college is a hospital. The examination of horses, being a benefit to the students of the college, is free. The charge for treatment in the sanatorium is 1s. 8d. a day, but interesting cases are treated free of charge. Each patient has its chart as in a human hospital temperature, pulse, respiration, etc., being noted. Among the living freaks is a hare with six ears, and a bull, three years old, with its heart in its throat, which, though stunted in growth, is perfectly healthy.

There is also a military school of shoeing attached to the college. The charges for shoeing are 8d. in the summer and 1s. 2d. in the winter, these being a little higher than the charges of an ordinary farrier. Shoes cost 5d. each.

THE ROLLER FLOUR MILL.

The Hungarian milling industry has a name all over the world; the wheat ground is the finest that nature produces from a miller's point of view, both for colour and strength, and the flour produced amounts to 80—85 per cent. of the wheat ground. Eight grades of flour are made, and as there is a good local demand for the lower grades, which are consumed in the form of a dark coloured bread with red crust, the millers are enabled to export a fine "super" of perhaps only 10 per cent. of the whole flour.

The Pest flour mill is fitted with roller machinery by Ganz, and has a capacity of 2,000 tons a week, *i.e.*, they grind 1,500 quarters of wheat a day and make 70 sacks of flour an hour. The grinding on the rolls was pronounced to be good by the milling experts of the party, but most of the machines were working hot through there being no air exhaust. The purifiers were mostly of the gravity air type. The sifting was all done on Haggenmacher plansifters (the only part of the machinery not made by Ganz), a complicated machine with numbers of sieves set in a frame one above the other and necessitating a spare set of sieves for each machine. Instead of using elevators and conveyors, men are employed to catch the products in sacks and convey it from one machine to another, presumably because the stuff is thus less injured in transit. Mill stones are used for cleaning the bran after rolling off any flour that may still be attached, and this helps to give a brown colour to the low grade flour, which however, being clean, is not wasted as in England, where it is unsaleable except as cattle food. Lifts convey the workmen from one floor to another. The mill was started with a 13 h.p. engine; the present engine is 1,300 h.p. For the engine boilers coal dust is used in special furnaces; it is cheap and combustion is complete, and is said to be a most satisfactory system. The shaft is 223 feet high. It was somewhat surprising to find that the mill had no means of loading or unloading direct from the Danube, had no railway communication, and was at the opposite end of the town to the elevator. An interesting object in the mill was an old roller machine made 60 years ago before any roller mill was ever thought of in England.

The mill was inspected under the guidance of Count Széchenyi, the chairman of the company, the manager and other officials, and concluded with some welcome refreshments in the garden attached.

A move was then made to Margaret Island where luncheon was taken. The island is a beautifully wooded pleasaunce, about three miles long and a quarter of a mile wide, which divides the Danube into two branches a short distance above Budapest. It is remarkable for its medicinal sulphur waters obtained from an artesian well, 372 feet deep, which discharges 90,000 cubic feet of water per 24 hours, over the top of an artificial rock, 30 feet high, and falls in a pretty cascade into the Danube. The water has a temperature of 111° Fahr. and its principal medicinal constituents are carbonate, sulphate, silicate and chloride of calcium, sodium, magnesium and potassium, with some lithium and strontium. It is charged with free carbonic acid gas and nitrogen, and its smell is due to carbon oxysulphide. A pump room and baths adjoin the spring, and it was here that the photograph was taken which forms the frontispiece of this volume.

THE CHEMICAL, ENTOMOLOGICAL, PHYSIOLOGICAL AND SEED-TESTING EXPERIMENT STATIONS.

It is to be regretted that the time allowed for a visit to these institutions and the fatigue occasioned by the severe exertions of the last few days did not permit a thorough inspection of the many objects of interest they contained. But enough was seen to impress very strongly the usefulness of this branch of the work of the Government, both as a means of directly aiding agricultural industry, and as setting an example of experimental research and enquiry.

The stations provide accommodation for the scientific staff formerly working in the Ministry of Agriculture and elsewhere, and have only just been completed. Each is a detached building with a little land attached, and being situated on rising ground at Buda, are distant enough from the city for cultural experiments to be carried on. The equipment is first class and space is allowed for development. An object of the chemical station is to protect against fraud and adulteration, *e.g.*, of bounty fed sugar, as many as 800 sugar analyses being made in the course of the year. The total number of analyses now reaches 8,000 per annum, and includes the mechanical analysis of 100 soils by a method which deserves the attention of chemists. Organic combustions were made by means of Berthelot bombs. The Gerber milk testers used are provided with a spring clutch, new to most of the visitors. The gluten content of flour is tested by its rising capacity ; a dough is made, and baked in oil, the increase in the height of the oil in the vessel being measured. The method is a quick one, and it would be interesting to compare the results with that in use at Magyar-Óvar (page 35).

The Entomological Station is chiefly noted for its work upon the phylloxera, which to a large extent saved part of the Hungarian wine-growing industry from extinction. Its work is now widened to include all kinds of animal pests. Among other things a specimen of a tailless rat, peculiar to Hungary, was noticed. For further particulars see page 170.

The Physiological Station contained a complete apparatus for feeding experiments on cattle and pigs, with appliances for collecting the manure, and a weighing machine, the object of the experiments carried on being to ascertain the relative feeding value of certain rations. There was also a superb collection of plants and grasses, dried and mounted. In the garden experiments were in progress upon the vitality of plants in an atmosphere free from carbonic acid gas.

The Seed Control Station carries out examinations for farmers gratis, but for seedsmen charges a uniform fee of 5d. per sample for an examination of clover for dodder, for purity, for germination, for identity (genuineness), or for moisture (important in beet seed). For testing it is customary to take the average between two samples of 200 seeds. The method for ascertaining percentage of germination was the familiar one of laying on moist porous paper or in pans, but the proper temperature and the time required seems to have been specially studied. There was a good automatic contrivance for determining the weight of a litre of seeds. A very useful function of the station was the preparation of sets of seeds, both of weeds and cultivated plants, which were on sale for museum purposes.* Mixed meals were analysed by microscopic examination.

It seemed almost impossible to drag some of our agriculturists away from this experimental station, but at length the drive was resumed to the Matthias Church, built in the 13th to the 15th centuries and named in memory of Hungary's canonized King, beautifully situated on a height overlooking the Danube, beyond which Pest is spread out over the plain (figs. 27 and 31). After viewing the richly ornamented interior, the drive was resumed to the Royal Palace, an enormous pile splendidly situated (fig. 29) and thence down the Serpentine road that leads through the Christina district of Buda, which still preserves much of its quaint Hungarian picturesqueness, through the tunnel, which is cut through the heart of the hill on which the palace is built, and over Adam Clarke's perfectly proportioned suspension bridge to Pest and the Hotel Hungaria.

THE MUNICIPAL BANQUET.

The banquet at the Hotel Hungaria in the evening was a brilliant function. The tables were beautifully decorated and loaded with delicacies and choice wines. Chief Burgomaster József Márkus and Burgomaster János Halmos presided and they were supported by Mr. Pál Kiss de Nemeskér, Parliamentary Secretary of State in the Department of Agriculture, Mr. Ödön Miklos, late Secretary, Count Ede Pallavicini, Count Imre Széchenyi, Mr. Endre György, Mr. Zoltán Szilassy, Dr. László Goger, Mr. Menyhért Szántó, Mr. Folkusházy, and a number of other noblemen and gentlemen, covers being laid for nearly 100 persons. Each guest was provided with a menu tastefully printed in Hungarian and English, and with a packet of

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* A weed seed from barley (*Melampyrum pratense*), which a well-known English expert failed to recognize, was shewn to the staff and instantly identified, a sample of the seed being a few moments after produced.

Fig 34. Bee farm and school, Gödöllő.

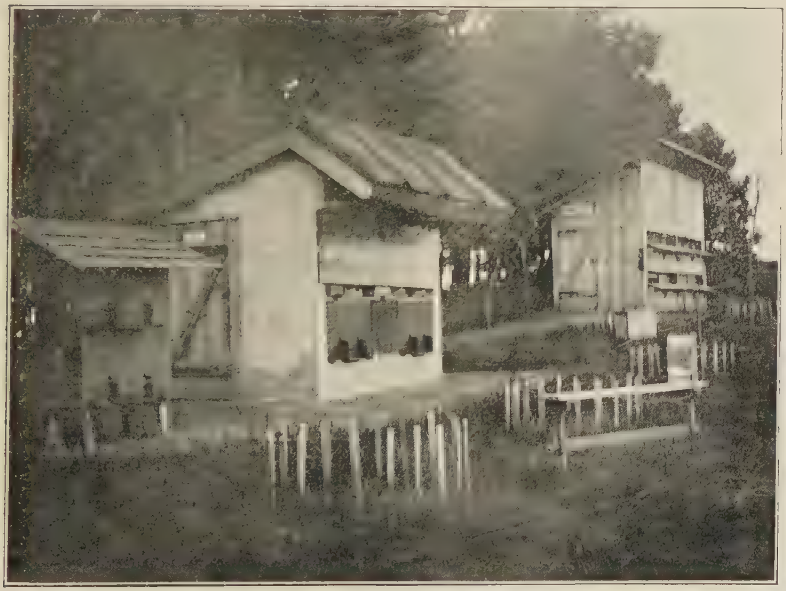

Fig 35. Beehives at Gödöllő, shewing entrance to back of hive.

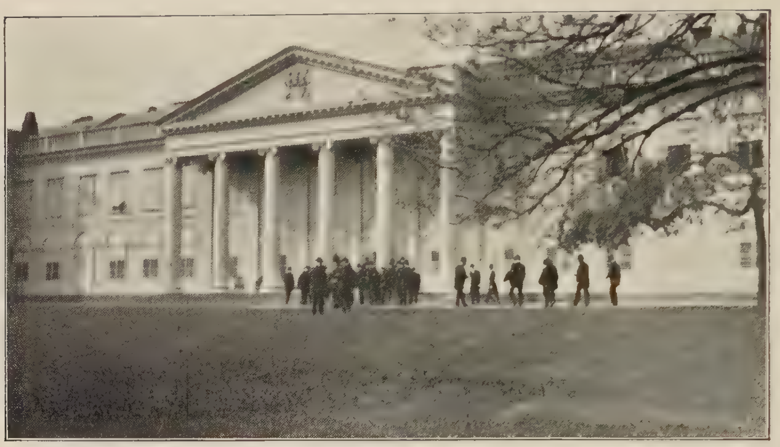

Fig 36. Count Alexander Károlyi's palace at Fóth.

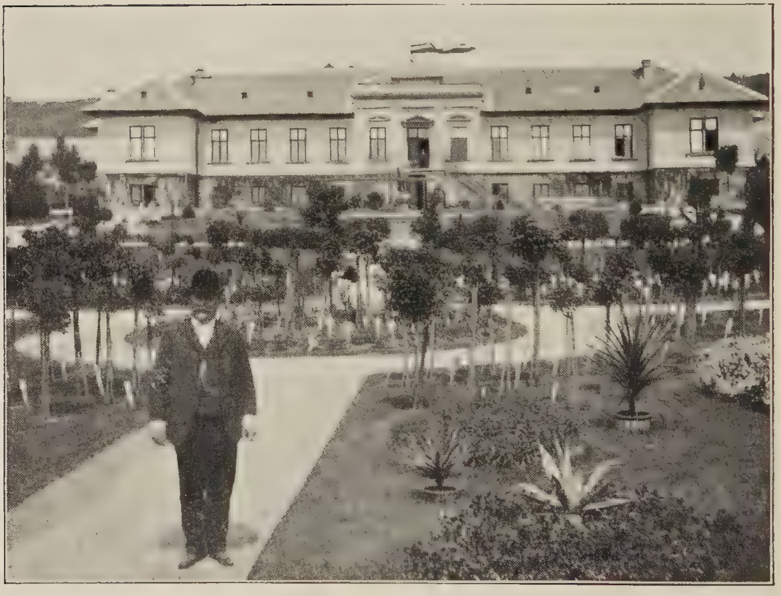

Fig 37. Royal horticultural school, Buda-Pesth, and the Director.

"smokes" tied with ribbons in national (red, white and green) and municipal (red, yellow and blue) colours. The following is an account that appeared in one of the daily papers next morning:—

> The first toast, that of the King, was proposed by Chief-Burgomaster Márkus, and duly honoured, all standing. After the outburst of cheering that followed this speech had subsided, Burgomaster Halmos raised his glass in proposing the health of the English guests and on behalf of the Capital offered them the warmest congratulations He invited the guests to criticise everything they saw and experienced in Hungary and hoped that they would carry away pleasant and grateful memories of their sojourn in the country. The toast was supported by Chief Municipal Engineer Edward Fock in perfect English and honoured with three "cheers."
>
> Mr. E. A. Fitch replied on behalf of the guests. He thanked the Minister of Agriculture most heartily for giving to the English farmers an opportunity to visit—and learn from—Hungary, a country which in everything and everywhere shewed itself to be making rapid strides in the way of progress. The institutions of the Capital brought home to them most strongly the self-sacrificing love of the population for their municipality. These institutions seemed filled with a most liberal spirit, filled with ideas of progress. Amidst a storm of applause he drank to the continuance of happy relations between Hungary and England.
>
> State Secretary Paul Kiss replied on behalf of Agricultural Minister Darányi, who had expressed his great sorrow at being unable to be present and had desired to thank the guests for the lively interest they had shewn in Hungarian affairs. The great stretch of land and sea which separated Hungary and England could not prevent that heartfelt sympathy which had bound together the two countries for the past hundred years. He wished the English farmers fine weather and raised his glass to the success of British Agriculture. Mr. J. Bossányi translated the Secretary's toast which was received with great applause.
>
> Mr. W. Macandrew's toast was an enthusiastic recital of the kindness which the Englishmen had received in Budapest. To the charms, the beauties and the public institutions of the city, which he called the "Queen of the Danube," he devoted a panegyric in which he described in eloquent language the richness and completeness of the public institutions, the cleanliness of the streets and above all the comforts of the electric railway.
>
> Among several other toasts, Mr. C. B. Russell proposed success to Hungarian Agriculture, Mr. C. N. Brooks gave the health of Mr. Andrew György, and Mr. J. Bossányi and Mr. Edmund Miklós, after eloquent speeches in English, drank to the English guests.

The music during dinner was provided by the first Gypsy band in Budapest, and afterwards it provided the accompaniment for some beautiful Hungarian love songs, sung with extraordinary feeling and pathos. In these songs the proverb that "Weeping, the Hungarian rejoices," is realised. Gradually the company dwindled till only a few musical enthusiasts were left, whose appreciation reacted on musicians, till they played with that wonderful skill and emotion, which only a traveller in Hungary has the privilege of experiencing.

Sunday, May 25th.

In spite of the late hour to which the festivities of the previous evening were kept up several members of the party crossed the river at 7 o'clock on the Sunday morning for a Turkish bath in Buda. The baths are fed by boiling springs from the base of the Gellért Hill, and over one of them, the Rudas Fürdő, was built, during the period of the Turkish occupation, a remarkable rotunda, which forms the main basin to the present day. Returned to the hotel, a special service was held at 10 o'clock, at which the Rev. S. H. Tucker, the English Chaplain in Budapest, officiated and at which nearly the whole party was present, together with several residents in the town. A visit was afterwards to have been paid to the Geological Institute (see page 172), but time did not allow.

HORTICULTURAL SCHOOL.

At noon a move was made to the gardening school (fig. 37), situated on the southern slopes of the Gellért Hill. The gardens cover 20 acres and here, under Mr. Angyal, the director, 31 pupils holding scholarships receive a three-years' course of training in all branches of gardening and fruit culture, theoretical and practical, about ten new students being received each year. In the school garden there was every possible variety of gardening both in the open and under glass. A special feature seemed to be the methods of training fruit trees into spiral, lyre-shaped, triangular and many other forms. Peaches and similar fruits were successfully grown in 6 and 8 inch pots. The arboretum and herbaceous borders were flourishing and this in spite of a poor soil and injury by hail and late frosts.* The hothouses seemed hardly up to the mark, but presented several interesting features; in each house containing any quantity of bloom a small stock of bees was kept. In the grounds is a small fruit preserving factory in which students receive instruction. In the school premises damage to trees by insect pests and other forms of disease were abundantly illustrated both by drawings and models, nearly all of which had been done by the students themselves. Parts of trees, which would illustrate the presence of pest or disease, had been cut off, mounted and varnished for reference purposes; the wax models and coloured drawings of the same were wonderfully true to nature and constituted a splendid training for students. Any student who had prepared such a drawing or made such a model could not possibly forget the subject dealt with. It appeared that the students begin with practical work and then proceed to the theoretical. The chief aim of the school seemed to be to give a thorough training to a limited number of pupils. There is a three-years' course for pupils who have had some education and practice in gardening; these are trained into independent gardeners. One year's courses for garden labourers and short periodical courses for priests, teachers, farmers and gardeners are also given.

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* The late frosts this spring had been particularly severe. At Kisbér, a mulberry hedge was observed, the foliage on which had been completely destroyed.

This is one of the stations from which the Government provide vine and fruit stock for growers free of charge, and many hundreds are sent out annually. Before leaving the party were entertained at luncheon in the school buildings; the excellent roast beef and plum pudding gave the meal quite an English character, and the latter, being brought in blazing, produced much surprise among the Hungarian guests.

FÓTH.

A short half-hour was left for driving the four miles down the slopes of the Gellért Hill and through the crowded streets of Budapest to the railway station. The horses, however, were quite equal to the occasion, and with the exception of the smash of one of the carriages in descending the hill (happily attended with injury to only one of the occupants), and the consequent delay of the two carriages behind, all safely reached the station in time to catch the 2.20 train to Uj-pest.

Here there were four splendid four-in-hands and a dozen other carriages in which the party were conveyed to Count Alexander Károlyi's palace. A soft road, affording, however, delightfully easy travelling, led through the estate; at every cross-road was stationed a mounted servant. The party was received in the palace by the Count and Countess and the Countess Elizabeth Károlyi. Dr. Ignatius Darányi, the Minister of Agriculture, also honoured the company by his presence.

The reception took place in a magnificent suite of rooms occupying the entire length of the mansion. One of the rooms contained the library, another a collection of hundreds of specimens of polished granite collected by the Count in his travels, and the walls were decorated with pictures, among which were several of Munkacsy's earlier paintings.

The Count is a nephew of Count Alois Károlyi, lately ambassador in London, and he himself talked English fluently. As initiator of the progressive agricultural movement in Hungary, he is a man of the widest knowledge, and the opportunity of conversation with him was greatly appreciated, as also with the Minister who now so ably directs the industrial enterprise of the country and has such an intimate knowledge of every detail of his department. The Countess and her granddaughter charmed everyone by their kindness and courtesy.

Near the mansion (fig. 36) is the catholic church of Fóth, built by the late Count, and containing some very fine sculptures; it being Sunday, the church was crowded with worshippers—all in their Sunday best. The costume of the women consisted of starched petticoats, which, owing to their number and stiffnesss expanded like a crinoline, reaching just below the knee, black top boots, and embroidered bodice (fig. 39). After the service the priest led the way to the mausoleum of the family in the crypt, containing some beautiful sculptures.

Afternoon tea in the mansion brought to a conclusion a visit which formed a delightfully peaceful interlude in the rush and bustle of the tour. The drive through the estate was full of interest. Much of the soil was poor sand, but it grew excellent rye. Some of the boundary hedges consisted of poplar. At one of the farms a pair of buffaloes was seen drawing a load of lucerne (fig. 38). With their black shaggy hair and skin, slow movements, and heads bent low, they look ungainly beasts, but they are said to be much stronger than oxen. They like to lie in a pond or river and splash the water over themselves and each other with their tails; indeed in hot weather it is difficult to get them out. They are mostly bred in Transylvania, where they are much

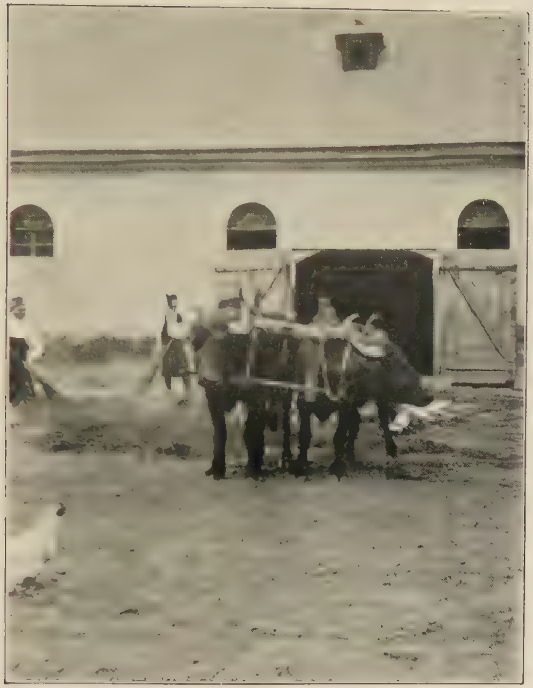

Fig 38. Buffaloes used for draught on the Fóth estate.

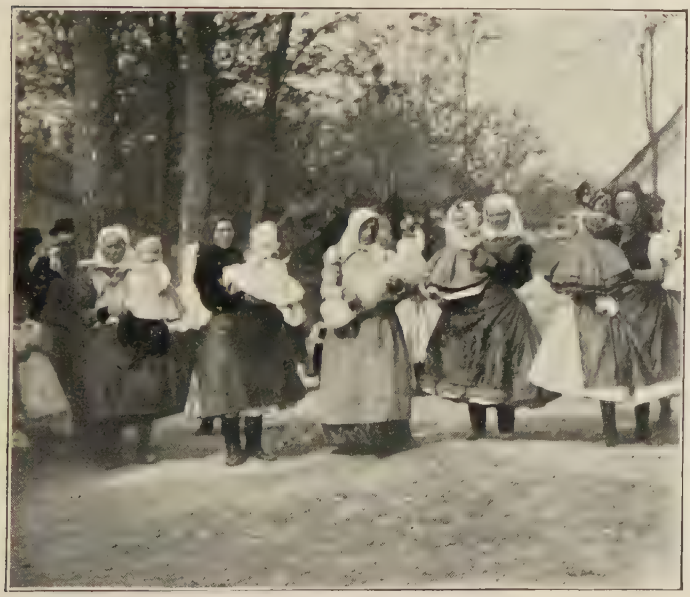

Fig 39. Hungarian peasant women at Foth

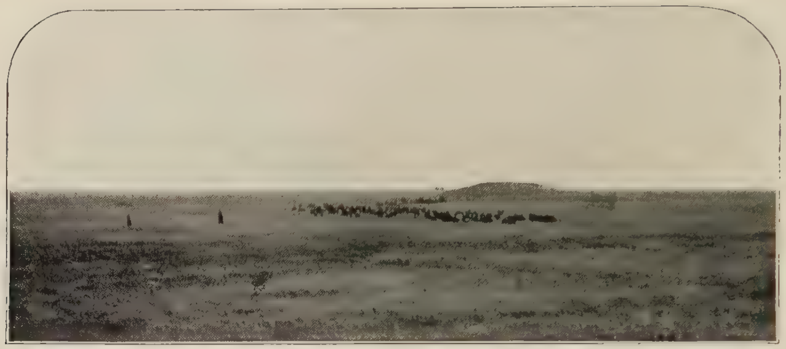

Fig 40. The great Hungarian plain, shewing ancient tumulus and herd of cattle ; a snap shot from the train.

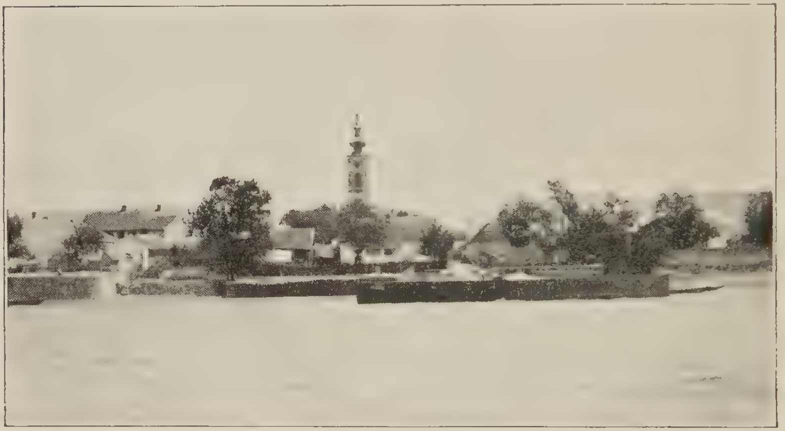

Fig 41. A Servian village ; from the Danube.

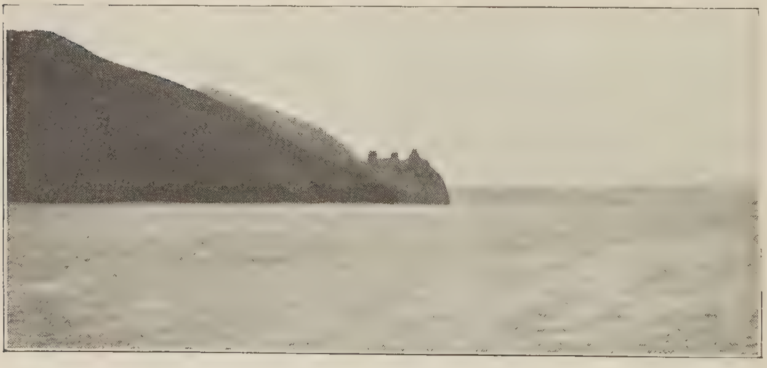

Fig 42. The ruined fortress of Kolumbács at the entrance to the rapids of the Danube.

more numerous, and their milk is used for domestic purposes, though too rich for most palates. The 240 cross-bred Simmenthal cattle seemed to be an unusually good lot, averaging 12 to 14 pints of milk. One of the cows had been and was still giving 19½ pints, though heavy in calf! She was an excellent shaped cow, with good udders. The daily and yearly record for each cow was given on a board over the stall. Further particulars will be found on page 172.

A somewhat exciting drive, owing to the great pace of the four-in-hands on the soft roads, brought the party to the Danube, where a special steamer was in waiting. Passing the Margaret Island the steamer slid gently down the stream between the heights of Buda and the palatial buildings of Pest, beneath the citadel-crowned Gellért Hill, and on into the open country beyond, and then returned to the landing stage in front of the hotel. As guests at dinner the party was favoured with the company of Dr. Etienne Bernát, Secretary of the Agrarian League (a society engaged in improving the condition of the humbler classes of the agricultural community) and the Rev. S. H. Tucker, and shortly afterwards left for the Western Railway Station, where the sleeping carriages were in waiting.

Monday, May 26th.

THE GREAT PLAIN.

During the night the great plain was traversed (fig. 40). The train passed Kecskemét,* the great fruit-growing centre, and Szeged, at the junction of the Theiss and the Maros, where the terrible floods occurred in 1879. A roadside station was pointed out whence about 40,000 geese and turkeys had been sent to London at Xmas.

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*A very remarkable development of the fruit-growing industry has taken place here during the past few years. The land appears to be extremely poor and sandy, but it turns out to be well suited for certain kinds of fruit, while vines grown upon it are exempt from phylloxera. At the time of my visit to the orchards and vineyards farmed by Messrs. Kecskeméti, peaches, pears, and melons were in their prime, and wine-pressing was in progress in the vineyard itself. The grape skins were cast into a hole in the ground, covered with earth, and left for the winter, after which they are taken out and distilled for brandy!—THE COMPILER.

The chief features of the plain are the immense tracts of corn, extending in some parts almost as far as the eye can reach. and the flatness, only broken here and there by an ancient tumulus, or by the remains of ancient river beds (which are soon to be utilized for irrigation), or, where the soil is sandy, by sand hills blown up by the wind. One is struck in this part by the absence of isolated houses, all being grouped together in large compact almost circular villages, consisting of an immense number of detached one-storied farmsteads. Some of these villages contain from 10,000 to 20,000 inhabitants. Round the village, perhaps half a mile in breadth, is a common, upon which feed flocks of ducks and geese; further away are seen herds of cattle, horses, or pigs. The sunrise and sunset is often very fine.

Temesvár was reached at 5.14 a.m. and here breakfast was taken and the journey resumed at 6 o'clock. South of Temesvár there was more pasturage; a flock of long wooled and horned sheep of the native Hungarian breed were noticed, almost the only ones seen throughout the journey; oxen for draught purposes had given place to horses. The Hungarian peasantry had been replaced by Roumanians, who wore black sheepskin hats, a hempen shirt and drawers and a white sheepskin coat, and opancas on their feet laced up over the ankle. There were also many gypsies.

The spurs of the hill country now came into view and at 9.25 in the morning the Danube was reached at the small town of Báziás.

THE DANUBE.

The steamer from Belgrade presently came in and a glorious 60 miles journey down the river was begun. On both the Servian and Hungarian banks the scenery was very attractive, and the villages, each with its prominent church, highly picturesque (fig. 41). Opposite the ruined fortress of Kolumbács (fig. 42), where a high pointed rock stood in mid stream, the river entered a narrow defile through the mountains which rise on either side to a considerable elevation, but were broken by a succession of wooded valleys up which many a lovely peep of the heights beyond was obtained. There were many whirlpools and the water surged round the steamer. A coal mine was passed on each bank, that on the Servian side being connected with the river by a light railway, but neither showed much activity.* Towards the end of the defile the worst part of the rapids was reached, where the water dashed over several ledges of rock, but, the river being in flood, these were negotiated without difficulty.

A thunderstorm which had been brewing now burst over the river with great violence, but if possible added to the grandeur of the scene; meanwhile the steamer entered upon a lake into which the river expanded below the rapids, and then entered the Kasan defile (fig. 44). This is the finest piece of river scenery in Europe; the stream is confined between rocks, which tower to the height of a thousand feet on either side, and so deep is the chasm that though scarcely 180 yards wide, the river appears almost motionless. Above the rocks, to complete the picture, eagles were circling. Along the Hungarian side a road made by the Government in 1804-7 is cut out of the solid rock. On the Servian side are the remains of Trajan's road, constructed in A.D. 103; the holes for the beams that supported a wooden gallery projecting from the rock are still to be seen; and on a projecting cliff is the Latin inscription cut by the Emperor Trajan on the completion of the work.

The journey ended at Orsova. Just below could be seen on an island in the river, an old Turkish fort, almost the only relic of the Turkish occupation. Beyond are the Iron Gates, the ledges of rock which have so seriously impeded river navigation till blasted by the Hungarian Government, and above them are the wooded heights forming the Roumanian frontier, from which are viewed the remaining piers of Trajan's wonderful bridge that spanned the river.

HERCULES-FÜRDŐ.

Twenty-five pair-horsed carriages were in waiting at Orsova to convey the party to Hercules-bath, fifteen miles away. All the town seemed to be turned out, and the mixture of Roumanians, Servians, Turks, Greeks, and Gipsies of almost a copper colour, each in different but all in bright costumes, gave the scene a thoroughly oriental appearance. Women stood in the doorways spinning. The route lay up the valley of the Cerna (Blackwater), which wound between forest clad heights of the Southern Carpathians, and presented a succession of scenes of surpassing loveliness (fig. 45). White robed peasants were working in the fields. Half-way a stop was made at Toplec to examine a Roman aquaduct still in a state of good preservation. Across the broiling river girls were picking mulberry leaves and silk-worms were kept in a cottage close by. Round a room 15 or 16 feet square were ranged two tiers of shelves holding some thousands of the silk-worms about an inch long and actively feeding on mulberry leaves. The silk annually produced by a peasant family would be worth some 30s. to 50s., a sensible addition to their small income. Near by, one of the nurseries for raising forest trees for distribution, as described on page 22, was passed. The sparrows in this region had a white collar and were in colour very like our tree sparrow, but longer and more graceful, and with a different note. Shrikes and woodpeckers were abundant, and two eagles were seen. The cicadas chirped continuously.

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*To many of the party it seemed quite incomprehensible why the country is not developed. Here are mining prospects on both sides of the river, but no works at all. A road has been engineered at immense cost along the Hungarian bank, and the navigation of the river improved by blasting at great cost, but practically no traffic was to be seen on either.

During this voyage and for the whole of the rest of the tour in Hungary, the party had the pleasure of the welcome company of Mr. Antal Rakovszky.

Ten miles from Orsova, the Cerna turned sharply to the right and entered a range of precipitous limestone mountains. In a deep and wooded gorge among these, Hercules-bath is situated (fig. 46). The place belongs to the State and everything has been done to perfect it as a pleasure and health resort. There is accommodation for 5,000 visitors; in the season it is crowded. The following printed particulars were supplied :—

HERCULES-BATH.

Hercules-Bath is situated in the county of Krassó-Szörény in the Cserna valley about 12 miles from Orsova, 550 feet above the level of the sea.

This bathing place was known to the Romans at the time of the Emperor Trajan B.C. 108, by the name of " ad aquas Herculi sacras." Some excavations having been made it was found from the relics excavated that this had been a favourite health resort of the Roman patricians. After the fall of the Roman Empire the fame of this bathing place declined, until in 1736 it was restored by King Charles III.

Hercules-Bath lies in a valley 770 yards long and 160 yards wide amongst limestone hills of 3,300 feet high, which protect it from the bleak north winds and give its climate a mild and uniform character. On

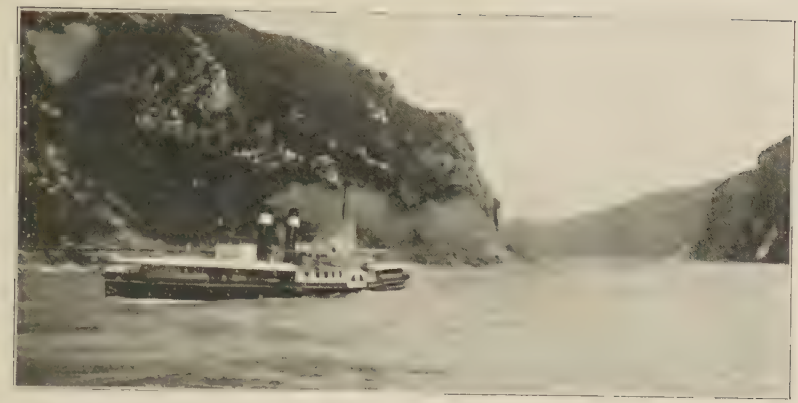

Fig 43. A Danube steamer.

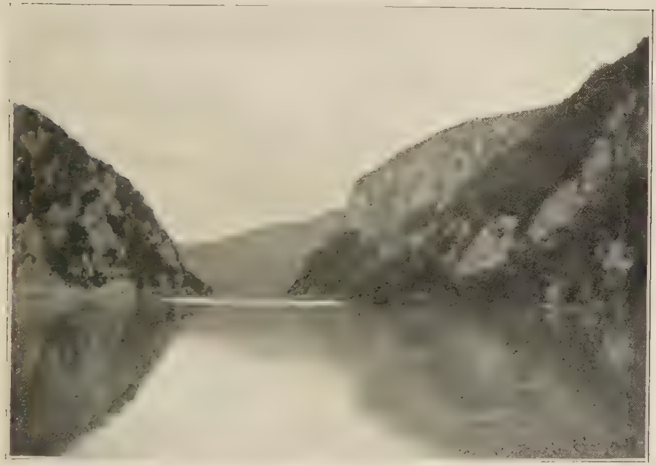

Fig 44. The Kasan defile of the Danube

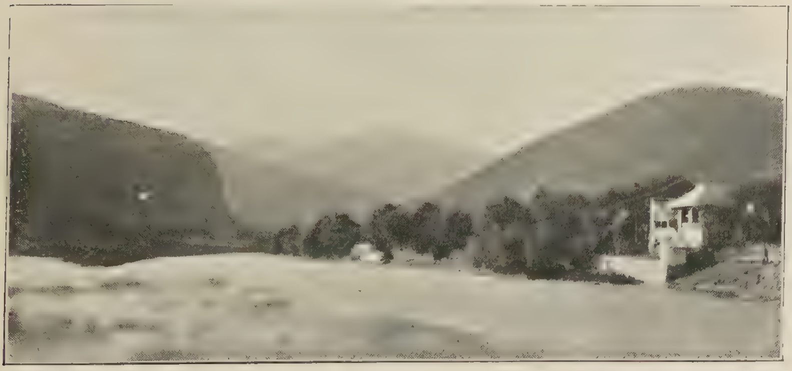

Fig 45. Near the Roumanian frontier ; mulberry trees for silk worm breeding in the Cerna valley.

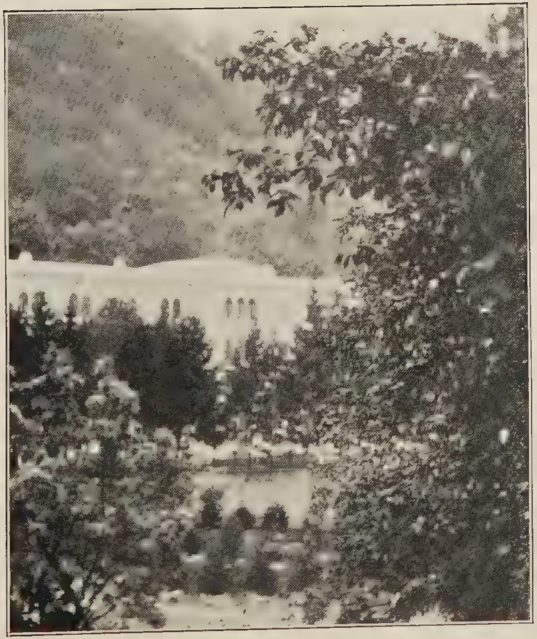

Fig 46. The Baths of Hercules (owned by the State).

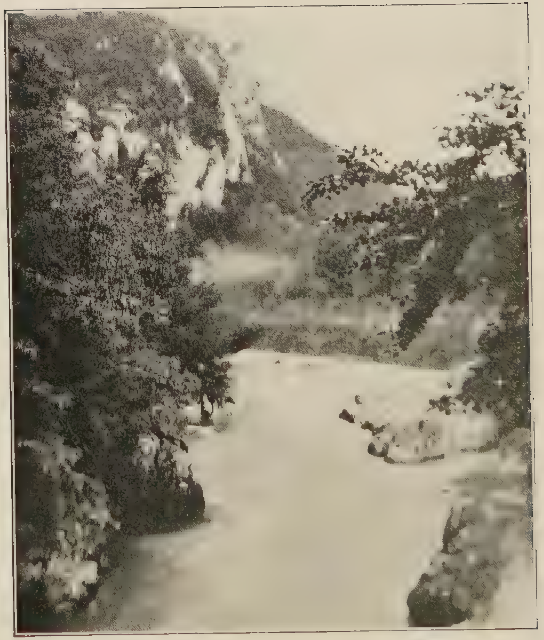

Fig 47. The Cerna river, above the Baths of Hercules.

both sides of the valley rise woods of pine and broad-leaved trees. The gloominess of the wild precipitous romantic rocks contrasts favourably with the exuberant, almost tropical flora of the valley. The air is clear, strengthening and aromatic, the average temperature is 57° Fahr.

The hot springs contain sulphur, bursting forth with a heat of 99–133° F. There is also a brine spring with a heat of 131–140° F., and in such an abundance, that it has hardly an equal in Europe. The baths are visited by people from every country of the continent, sometimes even by princes. In the middle of the principal square is Hercules Spring with a Hercules Statue made out of canon ore. On all sides there are the most charming walks.

Hercules-bath is the property of the State and is let on lease.

A walk up the romantic valley is exceedingly interesting (fig.47). A few hundred yards from the village hot springs burst from the rock in considerable volume. The foliage is luxuriant. Further, the torrent is crossed by a bridge, and here gipsies were noticed washing the river sand for gold. The original Roman bath was visited and the temperature of the water found to be 104° Fahr. By the kindness of the authorities the baths were open for the use of the party, and a swim in the tepid water was delicious. Being again guests of the State, a sumptuous dinner was provided in the casino at which Director Kolossváry acted as host, to whom Alderman Fitch expressed the indebtedness of the party at being again the recipients of national hospitality. A military band played during dinner, one of the airs appropriately being "Home sweet home," for this was the furthest point from England, and the homeward journey was to be commenced that night. At 10 o'clock the carriages were announced, and after a cool moonlight drive the station was reached, where the railway carriages, left early in the day at Báziás, were already in waiting.

Tuesday, May 27th.

Seven o'clock in the morning found the travellers again at Temesvár. Although a town of 40,000 inhabitants, the streets are unmetalled, and must be almost impassable in wet weather. Among the commercial houses in the town were noticed several English firms, Clayton and Shuttleworth among the number. There is a school of forestry here.

ARAD.

Arad was reached at 11 o'clock. A great reception had been prepared by the County Arad Agricultural Society, representatives of which were at the station. This body planned the whole programme for the day, which was carried out without the slightest hitch, and to the intense enjoyment of everyone. At the station were 25 Victorias, lent by the farmers and winegrowers of the vicinity, each of which took two members of the party, who were accompanied by an English-speaking resident.

Arad is a town of 50,000 inhabitants. The martyrs' statue was first driven to, through crowded streets. This fine monument was raised in memory of the 13 Hungarian generals who on this very spot on October 6th, 1849, paid with their lives for their devotion to the Hungarian cause, and upon the base of the statue Aldermen Fitch and Russell, in the name of the party as Englishmen and as farmers respectively, placed wreaths. This act of homage to the memory of brave men, while devoid of all political significance, was obviously gratifying to the townsmen, who rightly took it as a sign that Hungarian hosts and English guests were alike in their devotion to the principles of liberty and freedom.

A move was now made for the co-operative stores, well stocked with all the requisites of the agriculture of the district. This is one of the many departments of activity of the County Arad Agricultural Society of whose work the following account gives particulars:—

THE AGRICULTURAL SOCIETY OF COUNTY ARAD.

County Arad, as the centre of a district blessed by nature, has always been of great importance in the agriculture of Hungary. Here is the boundary between the great Plains and Bánát, the country of the golden sheaves, and here arise too the vineyards, the cradle of the fiery wines of Arad-Hegyalja.

From an agricultural point of view the importance of Arad is increased by the fact that the County of Arad Agricultural Society holds its sessions here.

This Society was founded in 1865 and from a modest beginning has developed into a very lively field of activity as regards agriculture. At present it has 820 members.

Two years ago on its initiative a consuming society was formed, whose task is to supply its members with cheap and good agricultural wares and to dispose of their products to the greatest advantage. In its first year of business the consuming society disposed of wares to a value of £62,500 and delivered 160 loads of oats to the army. In the last three years the Agricultural Society has further organized in the county 16 consuming societies, 15 agricultural credit banks, and 20 co-operative societies for selling agricultural products, namely, 12 for eggs, 7 for dairy products, 1 for corn.

The Agricultural Society takes part in all movements which touch the interest of the farming public.

The President of the Society is Count Robert Zselénski, M.P , the Vice-president and Director László Vásárhelyi, M.P. The staff of the Society consists at the present of 8 clerks, whereas three years ago only one was employed by the Society, a sure sign of its development.

The company was now entertained by the Society, conjointly with the city of Arad, at a luxurious luncheon. Mr. László Vásárhelyi, the President of the Society, took the chair, and was supported by the Greek Bishop of Arad, Mr. Hugo Laehne, director of the Society, Dr. Hámory, M.P., and about 50 other townsmen. The menu of the feast was printed in English, and a buttonhole of red, white and blue flowers was given to everyone. In an ante-room was a wine exhibition, arranged by the Wine Growers' Association, and the luncheon tables were loaded with hundreds of bottles of the different vintages. These wines are excellent, and as several of the growers were present, each desirous that his own wine should be sampled, there was some danger in protracting the proceedings. In the speeches there were many sympathetic references to the historical and political similarities between Hungary and England, and the hope was expressed that more commercial intercourse between the two countries might be established to the advantage of both. Reference was also made to the encouragement given to the wine-growing industry by the State, which owns 2,500 acres of vineyard in the vicinity.

The Wine Growers' Association includes 60 owners of vineyards, 41 of which are in the neighbourhood of Magyarád, and the remainder in the neighbourhood of Ménes. The wines vary in price from 1s. 4d. to 22s. 5d. per gallon in Arad, the cheaper as a rule being light new wines and the dearer being strong and old. The light wines, it is stated, do not carry, and hence are never imported into England. This is much to be regretted as it is certain the introduction of light wholesome wines of this character would be a great boon in this country. A price list of the wines, printed in English, was given to each member of the party, from which it was ascertained that enquiries should be directed to the County Arad Agricultural Society.

After luncheon, a visit was paid to Neumann Brothers' distillery, a vast establishment. By the kindness of the proprietors the party were conducted over these interesting works, and the whole process from the steeping of the maize and preparation of the barley malt, to the final product—pure alcohol—was explained. The bye products include yeast and spent grains. Some of the grains are fed on the premises to cattle, but the greater part is dried. The dried grains find a ready sale at 5s. per cwt. throughout the country, and as they contain from 4 to 5 per cent. of albuminoid, are a highly valued cattle food. The following reprint gives further particulars :—

NEUMANN'S DISTILLERY.

Amongst the factories in the town of Arad the two most worthy of mention are the distillery and steam mill of Neumann Brothers.

The distillery was founded in 1851 on a plot of 74 acres. It is fitted for distilling 6,600 gallons of alcohol daily, but owing to the stand-still in the export trade only ⅓ part of the factory's working capacity is made use of. Last year 275,000 qrs. of maize, 45,000 qrs. of barley and rye, and 223,500 qrs. of other products were worked by the mill. There is a smaller branch distillery, where compressed artificial dry lees are produced.

The number of cattle kept for fattening is 1,000, disposed of at the Vienna cattle market. Some years ago 3,000 to 4,000 oxen were fattened here. This diminution is to be explained by the fact that a great part of the swill gained in distillation is now dried and in such a form is bought gladly by the public for fattening purposes. This material is exported to Germany and Austria.

The stable manure is dried in the air, broken up and ground and in such a form is sold. It is used with great success in farming and is exported to Germany and Austria.

The grinding power of the steam mill is 147 tons of corn a day. Last year 34,000 tons of wheat were ground. The flour is exported to Austria, Germany, Holland and Brazil.

There are constantly in work 5 steam engines and 2 gas motors. Water is supplied by 5 artesian wells situated in the yard; one of them is 440 yards deep. The gas required for the motors and the electricity for lighting the premises is prepared by the factory itself.

The number of the workmen is at present 550.

The proprietors had kindly prepared a delicious repast of fruit and ices, with a taste of the choicest products of their

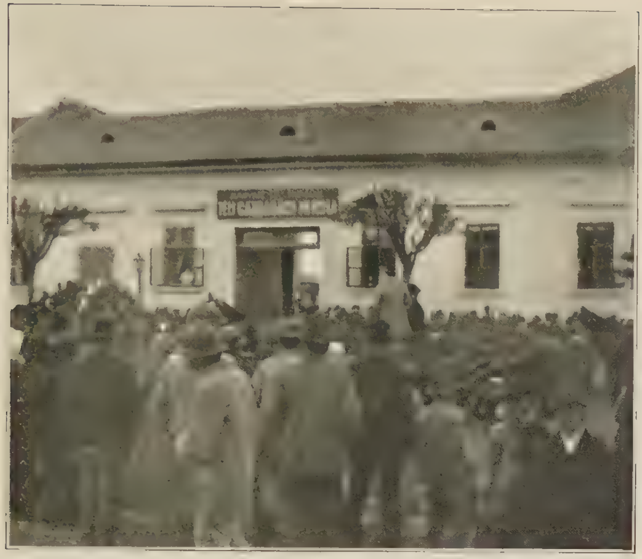

Fig 48. Peasants' agricultural school and farmers' club at Magyar-Pécska ; organized by the County Arad Agricultural Society.

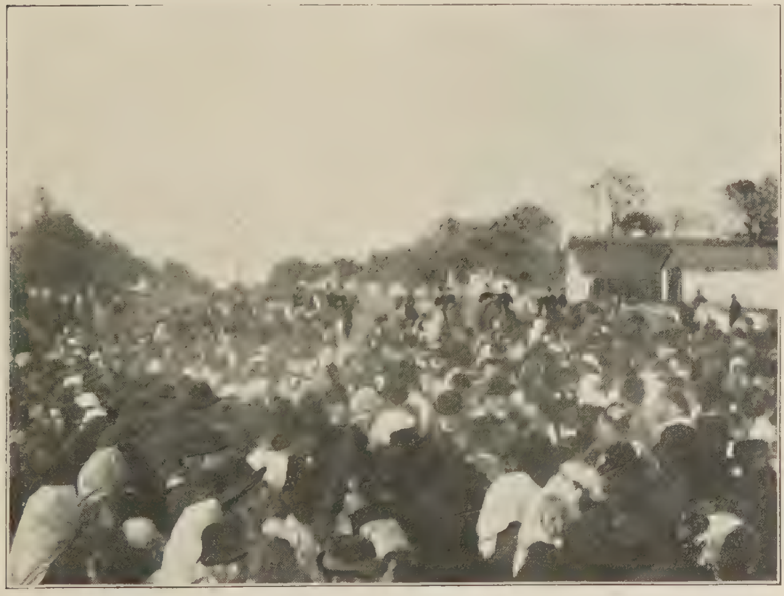

Fig 49. Reception at Kis-Pereg ; shewing the broad street and peasants farmsteads in a typical Hungarian village.

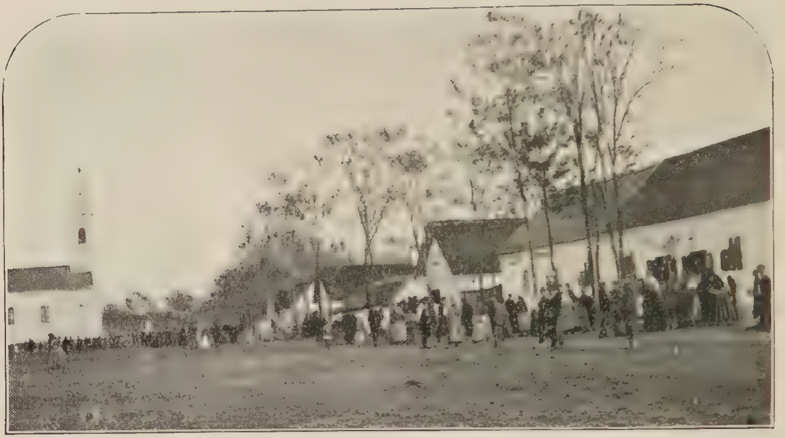

Fig 50. Co-operative consuming Society's store at Kis-Pereg, founded by the County Arad Agricultural Society.

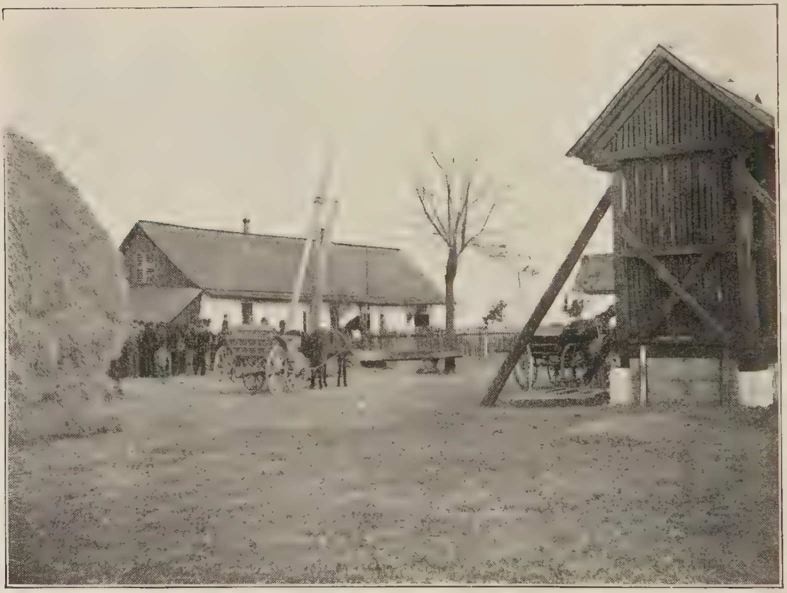

Fig 51. Model peasant farm near Magyar-Pécska, shewing maize drying house and well; organized by the County Arad Agricultural Society.

distilleries. Thus refreshed and after hearty salutations, a short drive brought the company to a level crossing on the line, where a special train, provided by the kindness of the Arad Csanád Railway Company, was standing, in which Magyar Pécska was reached after a few minutes journey. Here another set of carriages, this time belonging to the State, was waiting.

MAGYAR PÉCSKA.

This is a village of 8,000 inhabitants, but there must have been nearly double this number of people lining the two miles of village street, along which the procession drove. Here was a peasant farmers' club, and in the same building a school for the sons of peasant farmers, both organized by the County Arad Agricultural Society (fig. 48). The pupils were youths of 16 to 20 years of age, strong, pleasant looking fellows, who indulged in some very hearty singing, led by the headmaster. The teaching is free and the course of instruction occupies six weeks. Half the day is devoted to oral instruction on practical farming, and the other half to practical instruction in broom and brush making (from millet), farm carpentry and wheelwright's work, basket plaiting, beehive construction, and grafting, just the things wanted on a small farm. To judge from the specimens of work done the teaching is excellent. Such a school would be invaluable in British colonies, where each farmer must be his own universal provider. The following official particulars were supplied :—

MAGYAR-PÉCSKA.

Magyar-Pécska is a great village with 8,000 inhabitants and an extent of 14,800 acres. The railway passes through it, at a distance of 13 miles from Arad.

Here is a Farmers' Club, a branch of the County of Arad Agricultural Society, with 150 members, for the most part small farmers. The premises are given by the mother society, with a library, where daily papers, agricultural books and pamphlets stand at the disposition of the members.

Under one roof with the farm club there is a winter farming school organized by the Agricultural Society and aided materially by the Ministry of Agriculture. In this school from the 1st of November till the end of March the sons of small farmers enjoy, free of charge, theoretical and practical teaching. While the course is going on, every afternoon from 1 till 4 the pupils are trained in home industry, namely, basket-plaiting, cartwright-work, brush-making, broom-making and grafting; from 5 to 8 p.m., theoretical instruction is given on agricultural subjects. The fifth course of the winter school was wound up by an examination on the 6th of April, 1902. Since the opening of the school instruction has been given to 300 pupils.

The winter school is under the supervision and management of the Agricultural Society, the second secretary of the Society being permanently established during the winter months in Pécska. The principle subjects (plant-breeding and farm stock-breeding) are taught by this secretary.

The journey was now continued over the plain. There were no hedges or trees, but miles on miles of land cultivated in strips, with splendid crops of wheat, rye, barley, maize and clover as far as the eye could see, and at distances of 150 or 200 yards from each other the small homesteads of the peasant farmers, who hold from 20 to 100 acres of land round. There was a general appearance of prosperity. It should be added that in addition to the homesteads alluded to, each peasant farmer has his house in the village, used principally during the winter months when the snow is deep on the ground.

In the heart of this fertile district was a Model Peasant Farm. Of such farms there are 80 in the country. These are organised by the local Agricultural Societies and supported by the State by a loan of stock and implements, upon the value of which the tenant pays three per cent. interest, and which must not be sold till the loan is repaid. The farms must be open for inspection and accounts published annually; a suitable rotation is recommended, and the tenant is expected to show a good example to his neighbours.

This particular farm (fig. 51) was organised by the County Arad Agricultural Society four or five years ago. The farmstead, with its corn-crib (maize drying shed) and well (20 ft. deep), seemed to be kept in good order; the house was beautifully clean and there was a general appearance of thrift. Even in this humble abode, taste was exhibited, the jugs were of a pretty green ware, and the walls were decorated with plates, each one inscribed with the name of one of the children. The floor was of clay, sanded, and the stove was adapted for burning straw, the only fuel obtainable, and had a seat all round; there was no connection with the chimney. In the farmyard was the maize drying house—a long, narrow, wooden erection, six feet wide and 10 to 15 high, with splined sides leaving spaces for the free passage of air, to prevent the maize from heating. The building was supported by wooden struts to guard against strong wind. The good quality of the stock struck everyone; the horses looked like making three figures in England. The stock included four mares and two foals, two cows with calves, and two sows with litters. In the fields were 20 acres of winter corn, 10 acres of spring corn, 20 acres of roots and green crops, and 10 acres of grass. The following official particulars will be read with interest:—

SKETCH OF THE INSTITUTION OF MODEL FARMS.

Out of the area of 54,400,000 acres under agricultural cultivation 5% is taken up by small holdings (up to 8 acres) and 45% by small farms (between 8 and 120 acres). The sum of the small farms form, therefore, an important item in the agriculture of Hungary.

To make small farmers better acquainted with the methods and advantages of rational farming and to offer an example worthy of imitation, since 1897 one, and sometimes more, model farms have been organized in every county by the Agricultural Minister. The farmer whose farm answers to the necessary stipulations and is chosen for this purpose is given such support for the suitable re-modelling of his farm as will enable others to learn from him and eventually to follow his example without external aid.

The organization of a model farm generally takes place with the intervention of the county agricultural society, the later supervision and control is performed gratuitously by an intelligent farmer or steward elected by the society.

The area of the model farms varies between 12 and 42 acres. The subvention granted by the State to a model farm is used to complete the existing equipment or to replace it with a more suitable one. The subvention consists usually of the following items: farm machines and implements, breeding stock, fruit trees, vine stocks and grafts, seeds, the expenses of adaptation of smaller buildings and of the erecting of dung hills.

The owner of the model farm is obliged to follow the prescribed rotation of crops; to lend the greater machines to other small farmers in the village; to sell the offspring of live stock and seeds in the village or in the vicinity.

To-day there are 80 such model farms, a description of one of these in Magyar-Pécska (County Arad) follows.

MODEL PEASANT-FARM IN MAGYAR-PÉCSKA.

This farm was transformed into a model farm in 1898 on the proposal of the County Arad Agricultural Society. The area of the farm is 57 acres in one stretch and, with the exception of the area taken up by farm buildings, the whole territory is arable land. The renovation of the dwelling house and stables, and the erection of a pig sty, bee farm, loft for maize and dung-yard cost £67, out of which £29 were paid by the State.

On the farm the following implements are to be found:—3 carts, 2 iron ploughs, 2 iron harrows, 1 grubber plough, 1 drilling machine, 1 riddle, 1 weeding machine, 1 maize grinder, 1 beet-cutter, 1 chaff-cutting machine. An addition has lately been made to these at an expense of £37 10s.

The live stock consists of:—4 mares of the race to be found in the vicinity of Mezőhegyes, 2 Bonyhád heifers, bought recently for £27 (State aid £17) in place of 2 old cows of little worth. For the adoption of pig breeding the farm received 2 sows and 1 boar from the Mezőhegyes State farm at a value of £12 10s.

The valuation of the whole farm is about £2,292, not counting the house in the village of Magyar-Pécska. This capital is divided as follows: £2,000 (87·45%) is the ground value, £100 (4·36%) capital in buildings, £75 (3·27%) is reckoned for implements and £117 (5·09%) for the live stock.

To make a proper use of the arable land, and to assure an adequate profit, considering both the fertility of the soil and the conditions of selling farm products, a suitable rotation of crops is arranged as follows: (1) maize, (2) winter wheat, (3) oats and vetches mingled together, (4) winter wheat, (5) maize and forage beet, (6) barley and oats. Each parcel of land has an extent of 8½ acres. Besides this there is an odd piece of 1¼ acres for lucerne. The production is, according to the crop rotation, as follows: 17 acres of winter corn, 8½ acres of spring corn, 17 acres of roots and green crops, 10 acres of forage. The proportion of the forage crop does not seem to be a sufficient one; however, it is made up for by some meadows on the bank of the Maros which belong to the owner.

Three hundred fruit trees of different kinds were given by the State for the planting of the avenue leading to the farmyard and of the farmyard itself.

Taxes paid by the farm amount to £15 18s. yearly.

The owner of the farm, Stephen Harsányi, has a wife and 5 grown-up children; two of them work on the farm, one is an independent artisan; the latter and two married daughters have their separate homes.

A man servant is kept on the farm with a salary of £12 10s. yearly with board and lodging.

KIS-PEREG.

The journey through this fertile district was now resumed. The procession of 20 carriages, horsed with splendid animals from the State stud-farm, and driven by coachmen dressed in

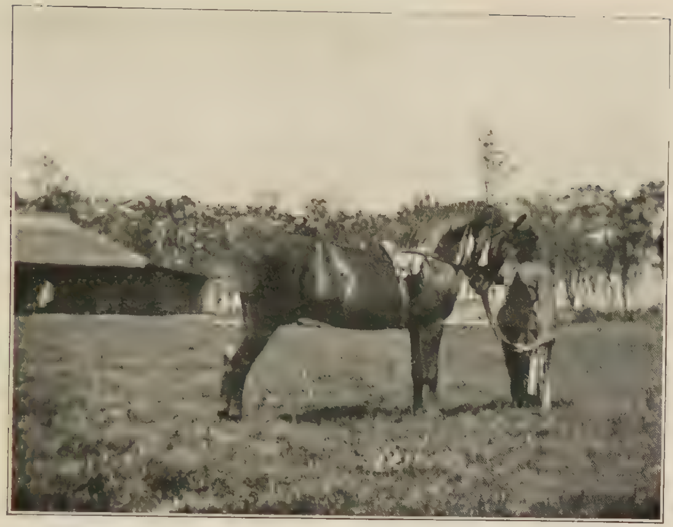

Fig 52. Stallion at the peasants' agricultural show at Német-Pereg.

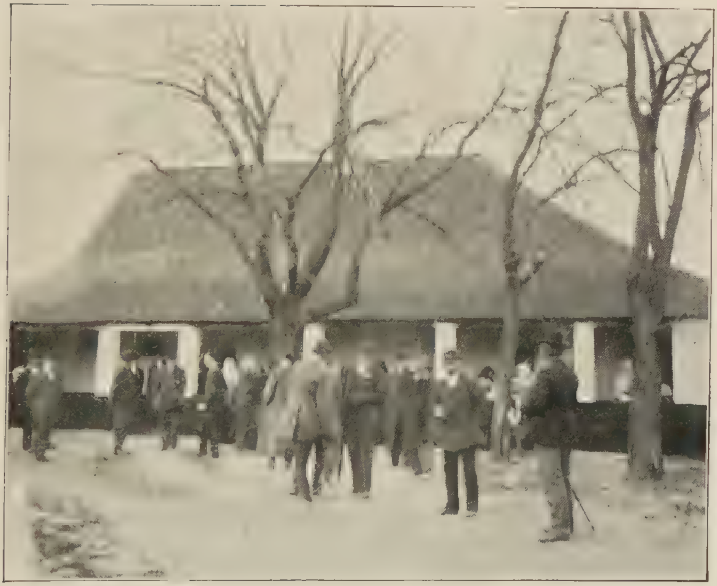

Fig 53. Co-operative dairy at Német-Pereg ; organised by the County Arad Agricultural Society.

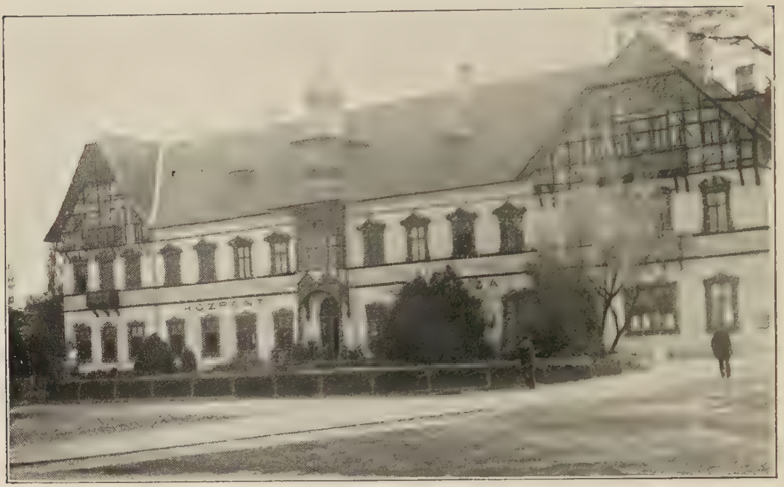

Fig 54. Hotel and casino, state stud farm, Mezohegyes

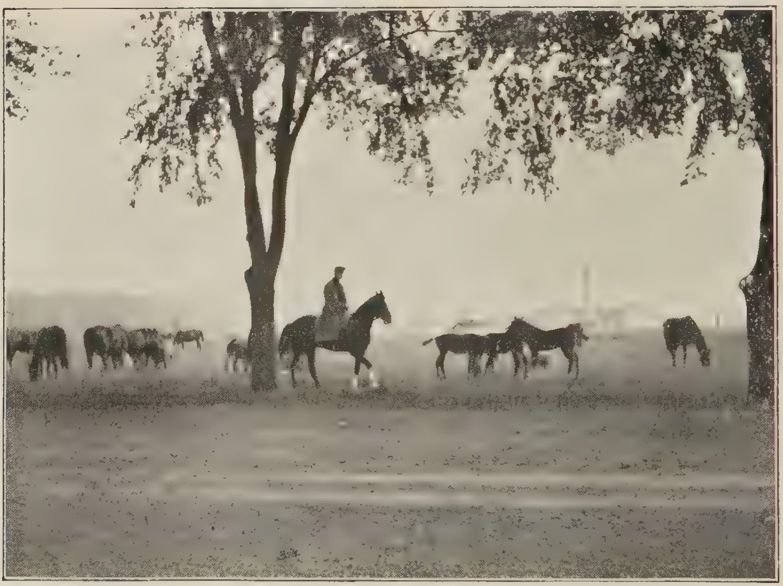

Fig 55. Mares and foals, Mezőhegyes ; sugar factory in the distance.

blue tunics braided with white, red breeches, top boots, and small black caps with feather, had an imposing appearance. Presently a cloud of dust was seen in the distance from which emerged 30 young farmers riding bareback on horses that would look well in Rotten Row. On meeting the carriages they turned and rode abreast of the procession, which finally passed through two triumphal arches and reached the village of Kis-Pereg.

Here a great crowd of villagers all in their Sunday best were waiting, and a group of white dressed girls ran forward with wreaths of evergreens with which they literally covered Alderman Fitch, and bouquets for everyone else. The band, for there is music everywhere in this gay land, struck up the Csardas—the national dance, the girls singing and dancing led the way, the horsemen brought up the rear, and the thousands of villagers mingling with the party surged on up the green-sward of the broad village street (fig. 49).

The villages of Kis-Pereg and Német-Pereg were colonized by the State upon what was then uncultivated land. The colonies have prospered well, partly because of the natural richness of the soil and partly because of the efforts of the County Arad Agricultural Society. Thus in this village there is a Co-operative Store, organised by the Society, but managed by the peasants who divide the profits, the benefit derived from which can be understood when it is remembered that under the old order of things, a usurer kept the village store and generally succeeded in getting the peasants into his toils. Adjoining the store is a reading room also managed by the peasants.

After inspecting the store, the throng moved on to the common outside the village, each of the party being now honoured by one of the young ladies taking his arm. Here a horse race was run, the men still riding bareback. Then off to the next village amid much cheering and still accompanied by the horsemen to the confines of the parish.

NÉMET-PEREG.

Driving into this village under a triumphal arch bearing the now familiar inscription of *Isten Hozott* or welcome, the party found an agricultural show had been specially got up for the occasion. For a village of small farmers, the show of mares and foals and of working horses, which were exhibited in the ring, was truly amazing (fig. 52). Several of the mares were almost thoroughbred and would have done credit to the Row or the hunting field, yet they were used for farm work and some of them were seen actually hitched to ploughs and harrows. Ten very fine stallions from the neighbouring State stud-farm were kept in the village, the fee for service being reduced from 25s. to 12s. 6d., on the understanding that the Government retain the right of buying the foals.

Round a well-shaded paddock were ranged the cattle,—bullocks, cows and calves of the Simmenthal breed, which however it is purposed to cross with Bernese Oberlands, because the Simmenthal are found to deteriorate. There were five bulls, but these belong to the community and there is no charge for service, the farmers having agreed to tax themselves for their purchase.

The show also included a threshing machine and traction engine of Hungarian make (the latter adapted to burn straw and wood), and other implements, together with specimens of village produce of all kinds, and swine. The pride of the peasants in their stock was very noticeable, and it was a treat to see so happy and apparently prosperous a people.

A co-operative dairy, also organised by the indefatigable County Agricultural Society was next visited (fig. 53). It was started in 1898; everything was beautifully clean; the excellent butter is sold in Berlin. This is one of the egg collecting centres of the Market Hall Co-operative Supply Society in Budapest, and the village makes from £1,000 to £1,250 per annum by this means.

The following printed particulars of these villages were supplied :—

KIS-PEREG AND NÉMET-PEREG.

Both these villages were colonized by the State on its own property.

The County Arad Agricultural Society founded in Kis-Pereg two years ago a consuming society, which has now 140 members with a fund of £116 and with a liability of the members of 5 times as much. The business of the consuming society amounted in the first year to a sum of £335. This consuming society is a branch of the Hungarian Farmers' Central Consuming Society "Hangya," from which it obtains its wares. The society is exceedingly well managed by simple small farmers.

Of recent years a farmers' club has been formed here by the County Arad Agricultural Society after the pattern of that at Magyar-Pécska. The number of the members is at present 110.

The cattle and horse breeding in Német-Pereg is in a very developed state. A co-operative dairy society was formed here by the County Arad Agricultural Society in 1898. This co-operative dairy society has 150 members with a stock of 150 cows; last year 53,925 gallons of milk were sent by the members to the society, from which 22,396 lbs. of butter were made and exported to Berlin at a value of £794.

The party left amid the cheers of the villagers, and then commenced the long drive to Mezőhegyes. The roads were the merest cart tracks with ruts that seemed almost dangerous, but beyond a heated axle and a restive horse, no *contretemps* occurred and perfect confidence was felt in drivers who never lost their *sang froid* in any emergency. As the boundary of the great State farm was approached, the farms became larger and the small farmsteads fewer. Within the estate the roads were beautifully smooth, but the dust became simply appalling, till it was almost impossible to see the carriages either before or behind. At length the Casino was reached, and utterly wearied out, the party, after expressing during dinner their gratification at the completely successful day arranged by the County Arad Agricultural Society, a day which can never be forgotten by anyone who was privileged to experience it, were glad to seek repose.

Wednesday, May 28th.

MEZŐHEGYES.

The party were up betimes the next morning to see this splendid State farm of 60,000 acres, of which 4,500 acres are occupied by the farmsteads, roads, etc., and 55,000 are under the plough. The settlement, with railway station, huge granary, casino (fig. 54) and the residences of the staff, is in the centre of the estate, and here also is a monument to Francis Kozma, the originator of the State stud farms of Hungary, and a museum of perfectly executed models of steam engines, machinery and implements. The total permanent population of the estate is 5,700, with 3,000 more in summer. Agricultural societies and parties of 10 or more persons can get cheap tickets, and in some cases free passes, from all over the country to visit the farm.

Previous to the Government taking over the estate at the end of the 18th century, the land was all puszta, this part of the country having been devastated in the Turkish wars, but the soil is deep and naturally fertile, and now grows splendid crops.

The rotation of crops adopted is of two kinds (1) a nine years' course, the main object of which is the production of sugar, and (2) a four years' course, the object of which is the production of fodder :—

Sugar Rotation.

1. Hemp ; manured with three tons stable dung per acre and straw.
2. Oats.
3. Wheat.
4. Sugar beet ; manured with four cwt. superphosphate per acre.
5. Barley.
6. Maize for green feed ; manured with three tons dung p. acre and straw.
7. Wheat.
8. Sugar beet ; manured with four cwt. superphosphate per acre.
9. Oats.

Fodder Rotation.

1. Maize for green feed ; manured with three tons dung p. acre and straw.
2. Wheat.
3. Oats and vetches for green feed.
4. Oats.

Thus, if the fodder rotation follows the sugar rotation the land gets three dressings of dung and two of artificial in 13 years.

The wheat looked splendid. At the time of the visit it stood four or five feet high and to the British eye promised seven or eight quarters of corn ; but the ears (not yet out) were very thinly seeded and, as a matter of fact, 4½ quarters is an outside yield.[*] The hay crops looked well, especially the cocksfoot hay, which is highly esteemed. In the permanent pasture—thyme, and in the temporary—flax, were abundant. Among the less familiar crops the cultivation of hemp, sugar beet and lupins was studied with interest. The irrigation of the estate is a matter of much difficulty. A watercourse has been cut from the river Maros at Arad 30 miles away by means of which several meadows and osier beds are irrigated very successfully, but the water supply being still insufficient, an artesian well is being sunk to a depth of 1,250 feet. There is on the estate a large

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[*] It must, however, be remembered that the Hungarian wheat produces much more bread in proportion to its bulk than English wheat.

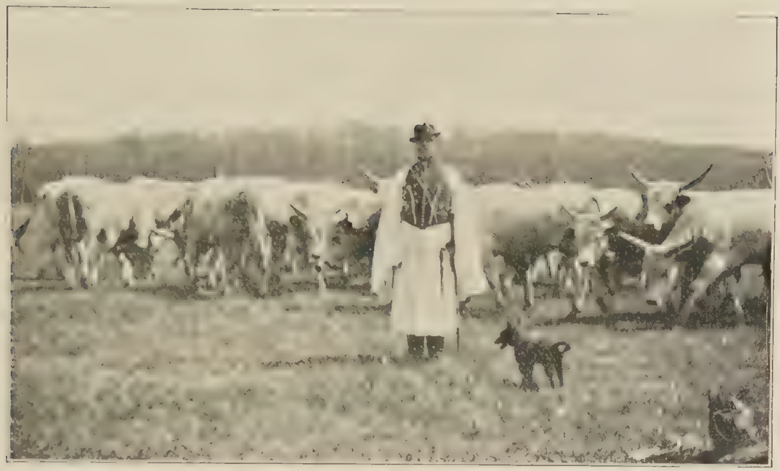

Fig 56. Young Hungarian cattle, Mezőhegyes.

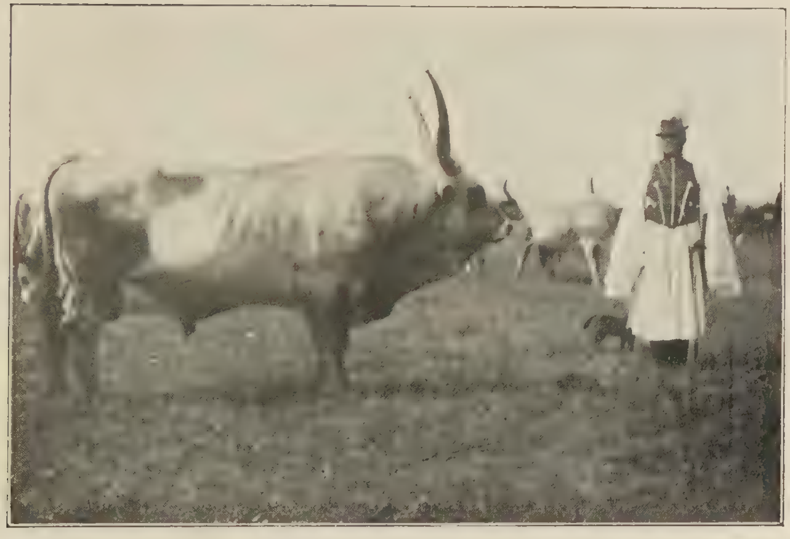

Fig 57. Hungarian bull "Hunyadi," eight years old, and herdsman, Mezóhegyes.

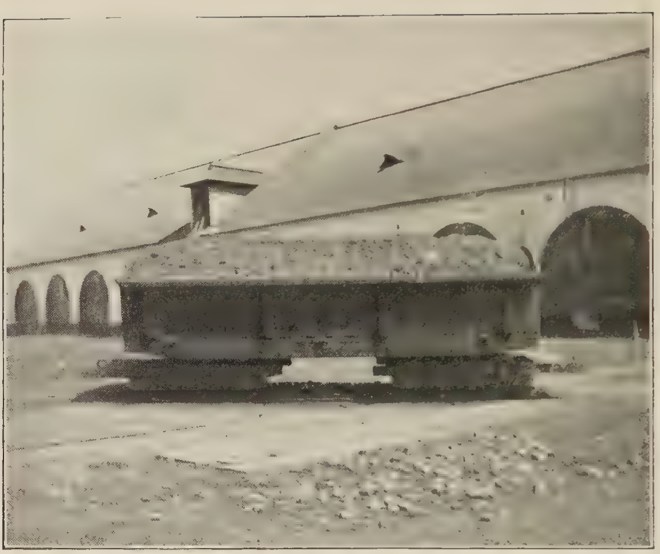

Fig 58. Beet-pulp silage (from sugar factory) for feeding cattle. Mezőhegyes ; shewing tramway and truck.

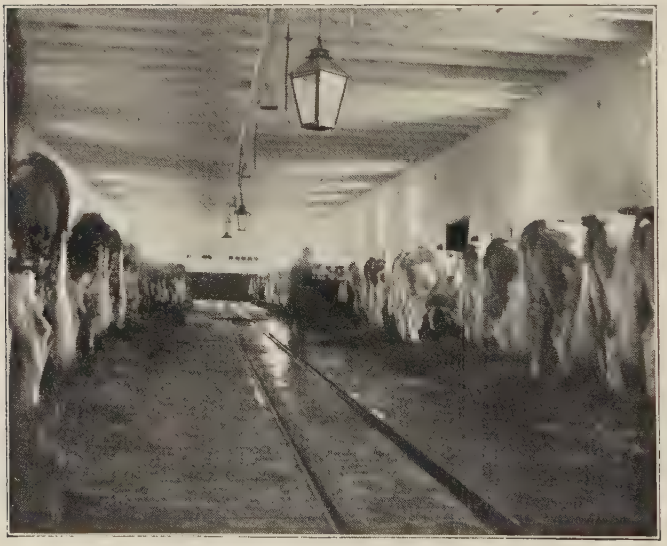

Fig 59. Interior of cow-house, Mezőhegyes, shewing tramway.

nursery for fruit trees, 15,000 to 16,000 trees being annually distributed to townships and village communities to encourage the planting of fruit trees along the highways. In a large wood on the estate is an enormous rookery of many thousands of nests, the only rookery seen by the party in the whole country. This season as many as 17,000 young rooks were killed and eaten by the Slavonian labourers. This, in common with the other State farms, is used for producing and distributing pure seed to Hungarian farmers. It is sold at a little over the market price so as not to compete unfairly with private growers, but the greater part is distributed, by exchanging for common seeds, to the small farmers by the county agricultural societies.

The sugar beet grown on the farm has a double use, being crushed for (1) sugar, while the refuse pulp is siloed and used during the winter and spring for (2) cattle food (fig. 58). There is a large sugar factory on the estate equipped with a new plant for sugar refining. From September to December the factory is in full work, hundreds of hands and a staff of chemists being employed: the sugar has till now been exported chiefly to India. For the remaining eight months of the year the factory is idle. The beet is sown in drills 14 or 15 inches wide, and when singled out the plants are left four inches apart. The singling is done by Slavonian peasant women with short handled hoes, the iron being 1½ inches across; 54 of these women were seen in one field in a row on hands and knees (fig. 60). The hours of labour are very long, and the men are at work in summer from 4 a.m. to 8 p.m. or as long as it is light. For cutting and stacking corn 4s. 6d. is given per acre.

The industrial establishments on the estate include seven distilleries, a hemp factory and a brick kiln, in addition to the sugar factory. The hemp is grown for fibre only, Italian seed being used, for while in Italy only the male stalks are cut and used for fibre and the female stalks left for seed, in Hungary the whole crop is cut for fibre. The hemp grows 5 to 7 feet high, and is then cut and stacked. From the stacks it is conveyed to the retting tanks where it is pressed down into the water by heavy wooden beams, steeped for three weeks to a month till soft, then taken out and set up to dry (figs. 62, 63 and 64). The scutching is carried out by a series of 30 scutchers, the first ones crushing the stalks and breaking the bark into pieces, the latter ones effecting the final disintegration of the fibre and combing out the broken bark. This part of the work is entirely done by girls, who earn about 2/- a day piece work. The operation is a terribly dusty one and the powerful fans are quite insufficient to clear the air of the factory, but in spite of the dust laden atmosphere the girls looked healthy. The hemp is finally plaited, compressed by a screw press and packed into bales tied up with rough hempen rope, which are loaded direct into the waggons of the narrow guaged tramway that traverses the estate, and removed to the railway. The hemp is exported to Great Britain, America and Germany. The two qualities sell at 35/- and 50/- per cwt., and the crop realizes £15 per acre. The best hemp has a breaking strain of as much as 286 lbs., the unit for hemp being 165 lbs. Much of the hemp is used locally and it is a pleasant sight to see the peasant women spinning at the doors of their cottages. The home-spun material of the hempen shirts and drawers of the peasants is coarse but very nice looking ; that made by the factories finer but less pleasing.

The live stock on the estate are most interesting, and a drive round the vast herds in the fields left a delightful impression of their good condition, and of the intelligence of the herdsmen, who, with their picturesque costumes and long whips, add a striking feature to the scene (fig. 56).

The pigs are of pure Mangolicza breed and include 170 sows. Being partly covered with coarse wool, they are extraordinary looking objects to English eyes. The breed has its good points ; the pigs are very hardy and have good back, loins and hams, but poor jowl. The woolly hair (which no doubt is useful in enabling the pigs to stand the severity of the Hungarian winter) is largely used for stuffing furniture and is said also to make the best painter's brushes, and the skin makes the best pigskin for bookbinding. But there is one fatal objection for English bacon curers, namely the enormous thickness of fat. Fat bacon is an important article of food among the Hungarian peasantry but has no market in England. The opinion was expressed that for export purposes, the Hungarians would do well to put lean into the fat by crossing with, for example, Tamworth pigs, the shape and head of which resemble the Mangolicza, and Yorkshire. In addition to the herd belonging to the estate, there is also a large herd belonging to the labourers, who kill on the average two pigs per family per year, and boil down the fat ; this they use in place of butter, and for cooking purposes.

The dairy cattle are a cross between Simmenthal and Kuhland, the latter breed being smaller and redder. The cows number 400. Tested for tuberculosis by tuberculin injection, 23 per cent. were rejected in 1898, 6 per cent. in 1899, 3·5 per cent. in 1900, and 3·6 per cent. in 1901. The milk is partly used by the labourers on the estate who get three to five pints daily, and partly (92 gallons on the day of the visit) sold to the milk factory at Arad at 4½d. per gallon delivered. The cowhouses are particularly good (fig. 59). The space for each cow is 21 ft. by 6 ft. by 12 ft., *i.e.*, 1,512 cubic feet. Ventilation is provided by apertures in the roof, allowing one square foot to each cow. The walk between the stalls, up which a tramway runs, is 12 ft. wide. The troughs can be flushed out with water. Sticks, covered with resin and oil, are hung up to the ceiling as fly catchers. The cows go into the meadow daily in summer.

The calves, as usual, were splendid. They had been weaned at about seven or eight weeks old and then given crushed oats and a little coarse ground maize, in addition to separated milk. The cross-bred Simmenthal bullocks were a splendid lot; there were 140 in one shed, averaging over a ton in weight. Over each the daily gain in weight was chalked up, a daily increase of 4⅔lbs. being noted in one case. The daily feeding rations of these fat bullocks consisted of 2¼lbs. rye, 4½lbs. oil cake, 4½lbs. chaff, 6½lbs. molasses (from sugar factory), 8¾lbs. hay, and 66lbs. beet-pulp silage. The backs of some of the bullocks were smeared with a special preparation of resin and oil to keep off flies.

The chief object of keeping dairy cattle on the estate is to breed bulls for sale to village communities such as that of Német-Pereg seen on the previous day. The price of these bulls averages £20 to £27. In one shed as many as 50 of such bulls were seen, and 150 are sold for this purpose each year, in addition to those sold to private breeders. The total number sold for public use since 1829, when the Swiss cattle were introduced, amounts to 3,000.

In addition to the dairy cattle, a large herd of native Hungarian cattle are kept on the farm for breeding draught oxen for use on the estate, and also for breeding bulls for sale for public service. All the bull calves reared are saved for two or three years, then only the best kept for service, and the rest cut and worked. These Hungarian cattle are in a semi-wild state, and live continually out of doors. The cows are stated to give rich milk, but too small in quantity to be profitable. The bulls (fig. 57), which are kept with the cows, were superb animals (one had sold for £130), with very beautiful heads, short legs, and tremendous necks, and they had knobs on the tips of their horns to prevent injury by poking. There were separate droves of 2, 3, 4 and 5 year old bulls being reared for sale. The finest team of Hungarian oxen seen in Hungary was noticed at one of the 26 farmsteads, drawing a four-ton load of lucerne. Each stood over 17 hands, though the legs were quite short. The horns were over six feet from tip to tip, and a line drawn from the centre of the forehead to the tip of the horn measured 41 inches. Each ox was said to weigh over one ton (fig. 65).

There are in Mezöhegyes 3,500 head of horses, besides the stallions hired out to the peasant communities. Horse-breeding was started here in 1783, and the objects are the same as at Bábolna and Kisbér—to provide horses for cavalry purposes and to provide good stallions for public service and for sale to private breeders. There are three breeds: (1) Nonius, *i.e.*, coach horses, mostly dark bay with almost no white spots, bred from original Norman crossed with English thoroughbreds. This breed is kept up by crossing the mares twice with Nonius, then once with thoroughbred. There was no unsoundness visible in any of the stables, and the general opinion was that they combined quality and strength. Some of the mares (fig. 55) looked like bony thoroughbreds; most were very much the type of the Cleveland at its best. Many had sores on their shoulders, said to come from grazing on new grass. The stallions are not used till four years old, there being presumably some good reasons for not breeding from younger stallions. (2) Gidran, *i.e.*, Arabian with a dash of English, all chestnuts, with Arab shoulders and action, and said to be less quiet than the half-breds, and therefore less popular in the army (fig. 61). (3) Half-breds, looking mostly like big boned thoroughbreds, very useful looking animals of the type of a hunter. They are bred on the same system as the Nonius, but there are two families named after the original imported stallions, "Furioso" and "North Star." If the horses are getting too light they breed from one of these stallions; if too coarse, from a thoroughbred sire.

The wonderful display of horses in this establishment, combined with the fact that throughout the country, whether on peasant holdings, private domains, municipal farms, or Government

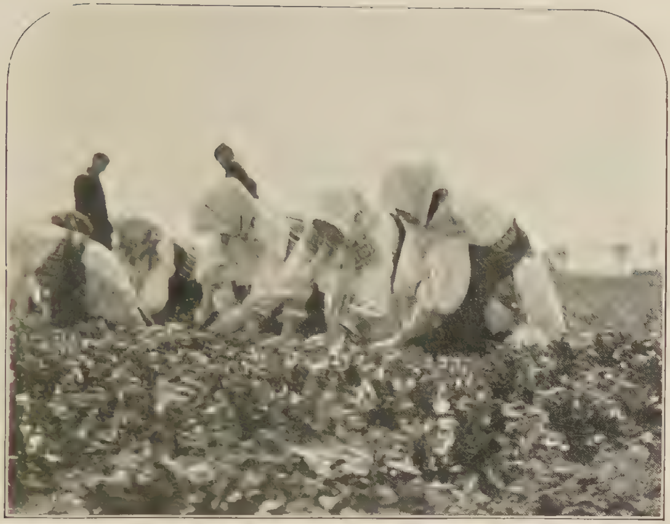

Fig 60. Slavonian peasant women singling beet, Mezőhegyes,

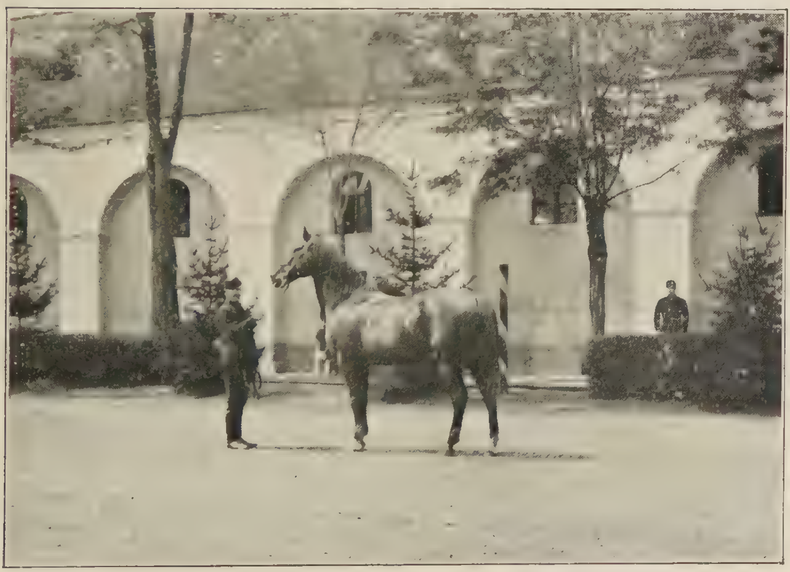

Fig 61. Anglo-arab stallion, "Gidran XL," in the Royal Hungarian stud, Mezőhegyes,

Figs 62, 63 and 64. Hemp manufacture at Mezőhegyes; shewing retting tanks, factory and drying yards.

estates, no badly bred horses were seen, raised in the minds of the party feelings of indignation at the methods adopted by the English military authorities in procuring remounts for South Africa. The Hungarian Government gives up to £28 for army horses, the English Government went up to £30. One private horsebreeder, a Hungarian M.P., stated that he had not seen a single remount among those purchased for the English army which cost £15. At one fair, where 200 horses were bought by an agent, the top price was £8. The agent was offered some horses at £20, but he stated that he was not authorised to go beyond £8. Another horsebreeder said he could have supplied, at £15 each, 200 horses, everyone of which would have been better than the best of those actually purchased. The Hungarians feel that owing to the loss of prestige incurred in the horse breeding industry, they have been the worst losers by these disgraceful transactions.

Such is a short account of the facts ascertained upon this noted farm, and during dinner early in the evening, hearty were the eulogiums passed firstly on the Minister who controls, and secondly on Director Bálint Juhász, Captain the Baron Podmaniczky and the other officials who manage this magnificent estate and stud. The train left at 6.50. Dawn found the party still upon the great plain passing through a region of peasant farms each with its little farmstead, while at distances of 10 miles or more from each other were the huge villages in which the peasants have their "town houses." Such a village was Karczag, with 20,000 inhabitants, mostly peasant farmers, where from the railway could be seen an agricultural peasant school.*

Debreczen was reached at five a.m.

Thursday, May 29th.

DEBRECZEN.

In spite of the early hour, and greatly to the embarrassment of those who were still *en deshabille*, the station was packed with the townsfolk, who, headed by the Mayor and Corporation, gave the party a tremendous reception. Outside, carriages were in waiting, in which, amid much cheering and snapping of cameras, the visitors were driven to the hotels (fig 66).

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*It was my privilege to pay a visit to this school. It consists of about 100 acres of land together with excellent buildings. There is accommodation for 30 students who pay £12 10s. per annum for board, lodging, and tuition. The course covers two years. Practical farm work holds the first place, together with the economics, bookkeeping, and management of a small farm, but in addition some very elementary chemistry and physiology are taught and also silkworm and bee culture. There seemed to be much room for improvement in the farming in this neighbourhood, but the peasant freeholders did well enough, and the "town houses" of some of them showed evidence of considerable prosperity.—THE COMPILER.

Debreczen is an old and wealthy town of 76,000 inhabitants and, owing to its wide streets and numerous detached one-storied houses, covers an enormous area. Historically it is celebrated for the part it played in the war of independence. It is the strongest Calvinist centre in Hungary, and threequarter's of its inhabitants are Protestants. There is in the town an English-speaking club with 50 Hungarian members! It being the feast of the Incarnation, the streets this morning were strewn with green stuff for a Roman Catholic procession, for Hungary is a land of religious freedom.

After breakfasting at the casino, a move was made for the great church, of Debreczen, in which the Hungarian Parliament met during that darkest period in the country's history; then to the Presbyterian Theological College, in the oratorium of which a special service was to be held. The chapel, an old-fashioned bare-walled building, with organ gallery, closely resembled many a Scotch Presbyterian chapel at home; the singing of Psalms 4 and 5 sounded curiously familiar, and when the Dean of the Theological Faculty, Professor Csiky, who occupied the pulpit, began an eloquent address in excellent *Scotch*, the resemblance was complete. It appeared that the college had a foundation which maintained two students in Edinburgh. The aged bishop of the diocese was present, and the chapel was crowded.

The service concluded, the carriages were found to be in waiting. Foremost of these was the great municipal coach and five, a well known institution in Debreczen, harnessed with two wheelers and three leaders abreast, which has been occupied by many a distinguished guest including the King and Louis Kossuth; in this Alderman Fitch, and in the other carriages the remainder of the party and many Hungarian gentlemen, drove to the Pallag Farm.

The way lay through the municipal forest that encompasses half the town and forms a pleasure resort for the townspeople. It was just a beautiful wilderness; deep rutted narrow tracks led in all directions, and over these the coachmen drove at a great pace for four or five miles without the smallest hesitation and with wonderful skill, brushing the luxuriant undergrowth on each side. The forest trees were mostly oaks on which abundance of mistletoe was growing. Birds were numerous, among them being kites, a kind of blue jay, hoopoes, and the brilliant roller (*Coracias garrula*) ; later in the day a bittern was seen.

THE AGRICULTURAL COLLEGE AND PALLAG FARM.

The Pallag Farm, 20 years ago, was an uncultivated sandy waste. Its reclamation was effected by the Municipality of Debreczen and it is now a well tilled farm of 480 acres (350 belonging to the town and 130 to the State) producing excellent crops, and giving an example of what can be done upon such land, an example which has been followed to the advantage of the whole district.

The college buildings up to this year were situated in Debreczen, but a new edifice has now been erected by the Government at a cost of £19,000 on the Pallag Farm to the great advantage of the students (fig. 69). The college is one of the four agricultural institutes, which rank next to the Academy at Magyar-Óvár, and which are especially intended for the training of young men to act as stewards of large farms. The ground of the college being rent-free the expenses of the institution are met by students' fees which amount to £1 13s. 4d. per mensem or £20 per annum, inclusive of board and lodging. There is accommodation for 100 students, 85 being in residence at the time of the visit. Intending students must be 17 years of age and have reached the highest form in a secondary school. The course of instruction occupies three years.

The first year's course being entirely practical, the pupils are occupied in the farm every morning from seven to twelve, and all work, whether in stable, in field, in garden, or in vineyard, is performed or controlled by them. In the second and in the third year the instruction, although partly theoretical, is kept in close connexion with practical teaching ; the subjects lectured on in the morning are practically demonstrated in the afternoon. The pupils are made attentive to all agricultural events and in turn control the labourers and make reports.

The new building is admirably appointed, and the museum, as appears to be always the case in Hungary, contains splendid collections. The collections include dried specimens of plants and grasses, models of fungi in wax or papier-mache, real fungi from various kinds of trees, models of grafting, enlarged models of seeds shewing the germ, fungoid diseases of plants, mounts of insect pests prepared with glue and gummed slips, the insect enemies of sugar beet, large model of bee to take to pieces, models of horses and cattle to shew veins externally and opening to shew internal organs, horses teeth at various ages mounted and hinged so as to open and shut, large crayon pictures shewing imperfections and diseases in horses, horse shoes and tools for shoeing, varieties of wool, specimens illustrating composition of soils and manures, and revolving stands bearing photos of everything relating to farming. With biological collections so complete, the teaching should be excellent though perhaps it is more by aid of prepared illustrations and models than from the actual plants and animals.

There being no gas supply on the estate, the college was lit with the electric light and the chemical laboratory was supplied with Van Vriesland's "aerogen" gas from an installation in the basement. In this, air is forced through benzin; the resulting mixture is inflammable, burns with a colourless flame and can be used for rendering a mantle incandescent. Another feature of interest in the chemical department was a moveable platform in the preparation room adjoining the lecture theatre (fig. 72). Apparatus placed on this could be projected by means of a lantern on to a moveable ground glass screen forming the front of the fume closet at the back of the lecture table. The students laboratory, the only noticeable defect in which was the inferior joinery, contained a splendid hot water apparatus which combined still, steam bath and hot water oven, supplied by the firm of Steinbach, of Budapest, which makes a speciality of such apparatus. One other novelty was a top for working benches consisting of *Lava Emailleted* from the Puy de Dôme, apparently an almost perfect material for the purpose. One of the experimental enquiries in which the staff of this department was engaged was the weekly analysis of the milk of each cow on the farm.

Behind the main building are the professors' houses, and beyond, is the Tobacco Experiment Station, under the control of Director Kálmán Kerpely (fig. 75). This includes fields where 186 different varieties of tobacco are grown, and cages

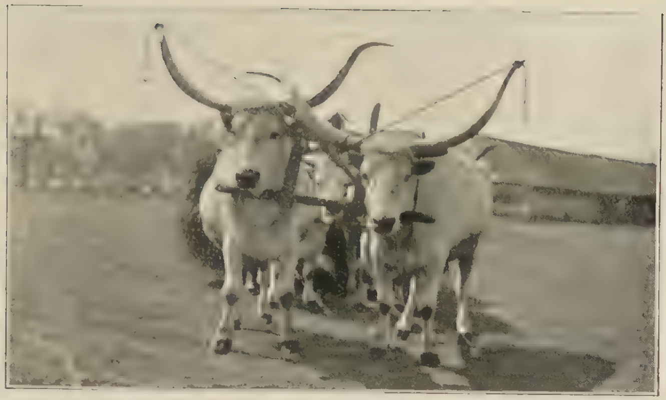

Fig 65. Hungarian draught oxen at Mezőhegyes, shewing method of yoking.

Fig 66. Departure from railway station, Debreczen at 5 a.m.

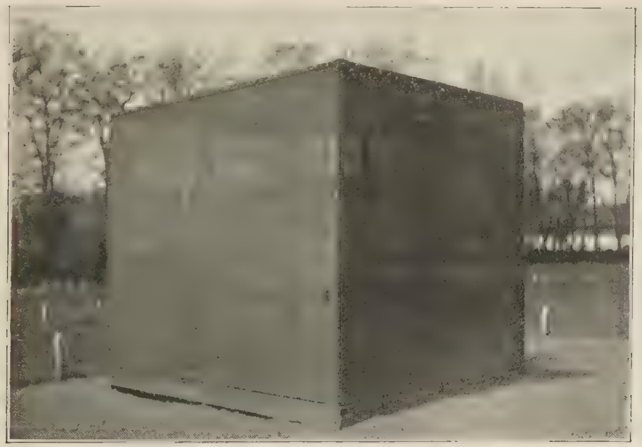

Fig 67 Tobacco experiment station, Pallag farm ; appliance for hybridizing.

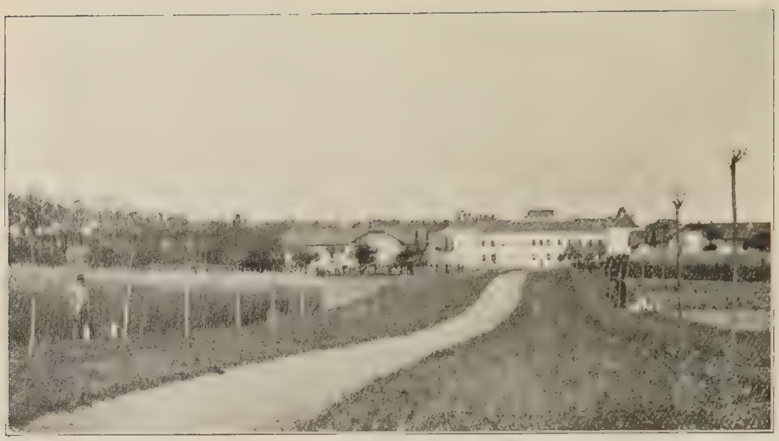

Fig 68. Agricultural college, Debreczen ; with professors' houses and trial grounds ; shewing rye growing on land which twenty years ago was a sandy waste.

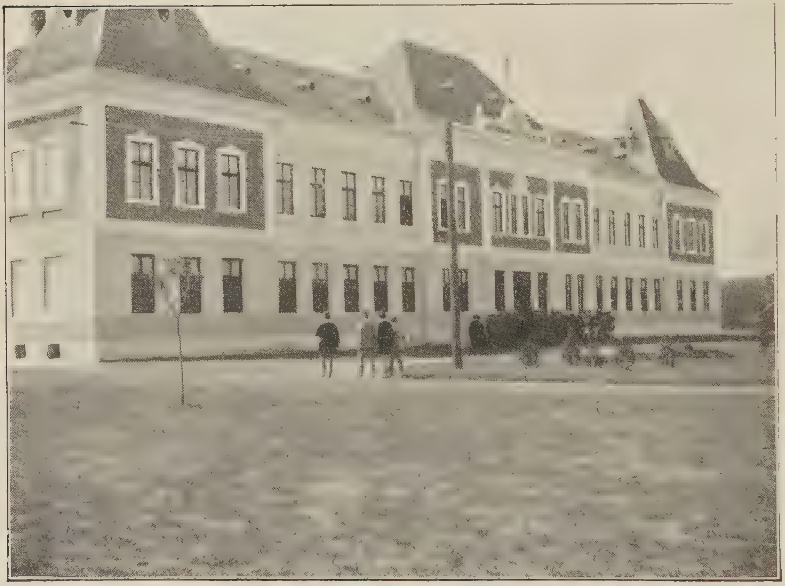

Fig 69. The agricultural college on the Pallag farm, Debreczen.

made of wire gauze to exclude insects for hybridising experiments (fig. 67). During the four years since the station was established 25 new varieties of tobacco have been raised. The tobacco curing is effected by three means (1) air, (2) sun, and (3) artificial heat. The first method is carried out in plentifully ventilated brick buildings fitted with wooden framework within (fig. 74), from which the leaves are suspended either hung on sticks (Dutch method) or on ropes (Hungarian method). For sun curing an open yard is used. Curing by artificial heat is the American method, and the curing house is provided in the basement with a stove, the flues from which pass round and round the building. The tobacco is cured by this means in three days, while the air curing method occupies three weeks, but it is the latter or Hungarian method that is preferred. The Hungarian cut-tobacco is largely used by the peasants who smoke it in pipes having a clay bowl, two or three inches deep, provided with a lid and a wooden stem so long as to reach from the mouth to the bottom of the waistcoat. It is cut far too coarse to be suitable for an English pipe, although the taste is very agreeable, nor does it make good cigarettes. Cigars, made from the best Hungarian tobacco and costing 2d. each, are excellent. Tobacco manufacture is a Government monopoly, the result being that licensed retailers in all parts of the country charge the authorised price.

Beyond the tobacco experiment station were trial grounds for other crops. Here was rye, growing in fine sandy soil to a height of six feet (fig. 68), illustrating the importance of good mechanical texture and sufficient moisture as a basis to work upon, the food constituents of crops being then easily supplied artificially. The character of the soil was well shown by its suitability for milk vetch, *Astragalus glycyphyllos*, which was being grown for ensilage. There was also a large vineyard and a nursery of fruit trees, each pupil being taught to graft each kind of tree. Soils from other localities in this part of Hungary served by this station are tested in an interesting way. Several cubic meters of soil are brought to the station, placed in cemented pits, each having a capacity of one cubic meter (fig. 76) and in these crops are grown and variously manured in order to discover the manurial deficiencies. It was obvious from the experiments then in progress that phosphate was the principal deficiency in the soil under trial.

The live stock on the farm were not only very excellent, but were displayed in a way that excited admiration, each class of stock – bulls, cows, calves, rams, sheep, pigs, etc., being in turn driven in front of the company of spectators; the little herdsman, who cracked his whip with the best, must be given the credit of winning some of the applause (figs. 73, 77 and 78). One of the buildings of the farmstead contained a comprehensive collection of machinery and implements. The labourers' cottages fronting the farmyard were patterns of cleanliness, and the walls were decked with bright coloured and sometimes very artistic plates, and with the inevitable portraits of the King and Kossuth.

The students of the college impressed one very favourably as a well educated and muscular set of men (fig. 70). An exhibition of fencing, high jumping and dumb-bell exercise showed that they had at any rate one very remarkable athlete amongst them.* During luncheon, which proved a very cheerful repast, the students provided the music and songs, and it was perhaps owing to their acclamations that the speeches were especially enthusiastic. The keynote of the institution was struck by the Principal, Mr. Coloman Kerpely, when he said " We aim at teaching two things, viz., Patriotism and Agriculture—these are the foundations of the Hungarian nation."

Luncheon was followed by a little relaxation in the skittle alley and an exhibition of fancy driving with the five-in-hand, the figure of 8 being performed in an astonishingly small space. Then amid cries of " Come back again " from the students, the party drove away for the return journey through the wood which was accomplished without serious accident.

The very fine " István " roller flour mill, similar to that at Budapest, was visited in Debreczen, but, owing to the Roman Catholic festa, was not running. The mill was 54 years old. The fire-proof doors, brass and silk wove sieves and splendid new 12,000 h.p. engines were among the many objects of interest. The drive was then resumed for some miles through and on the other side of the town to the extensive vineyards of the Debreczen Society for

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*The resemblance between the two nationalities so often noticed was on this occasion still further impressed by the remarkable resemblance between a Hungarian gentleman and one of the English party. So great was the confusion caused that they found it safer for the rest of the morning to go about arm in arm.

Grape and Wine Culture. The dust during the drive was simply appalling, and everyone was glad to get a wash and brush on reaching their destination.

THE VINEYARDS.

The establishment of this, in common with all the vineyards yet visited, was due to the destruction of the mountain vineyards by the phylloxera. They were planted in 1895 on uncultivated barren sand hills. A drive through the vineyard showed that the stocks were planted about three feet apart each way in straight rows. Each year they are cut down to within a few inches of the ground. Each vine is provided with a stake four or five feet high, up which the fresh shoot is trained. Two million cuttings are sold per annum. The hands number from 180 in winter to 400 at harvesting. The wine made last year amounted to 4,400 gallons. Hailstorm cannons are placed at intervals, a salute from which was fired as a welcome to the party.

The plantations of the Society for Grape and Wine Culture of Debreczen, according to the printed particulars supplied, lie about 1½ miles south-east of the city. Out of 350 acres, 250 acres have been planted with vines (from 1895 to to 1898), and 100 acres with fruit trees. The vineyard is laid out in 1,200 square plots, and on every plot are 4,600 vine stocks. In the whole vineyard there are at present 1,200,000 vines. Along the roads are 4,000 fruit trees. The wines produced are table wines at about 3½d. per pint, strong wines at 4d. to to 4½d., and sweet wines at 7d. to 2s. 10d. (bottles extra).

In the large wine-press barn, decorated inside and out with greenery, and perfumed with festoons of lilies of the valley running its whole length, a banquet was prepared, at which the Society and its President, Mr. Desiderius Komlóssy, entertained the English guests. Waited on by peasant girls employed in the vineyard, in clean white frocks and bright ribbons, enlivened by gypsy music, the tables loaded with choice vintages (*Nullum vinum nisi Hungaricum*), the evening sped rapidly away, and the sun set before the last good-byes were said, and the party drove back to town.

Late in the evening there was a reception at the casino by the President and members, the pleasure of the entertainment being enhanced by the music of a gypsy band, celebrated as one of the best in the whole country.

Friday, May 30th.

THE HORTOBÁGY PUSZTA.

After an early breakfast next morning, consisting, as usual, of a cup of excellent coffee and a "kippel," *i.e.*, a roll covered with caraway seeds and eaten without butter, which is indeed never used with bread in Hungary, the party were driven to the station, some, however, owing perhaps to confusion caused by the public clocks having long hour and short minute hands, barely catching the train. The railway to the Hortobágy is a newly-made private line, and the kindness of the company and its Managing Director, Mr. Cornelius Tolnay, in providing a special train is gratefully acknowledged. The carriages were comfortable, the road was level and well made, but, the regulation speed on the branch lines being limited to 13 miles an hour, the travelling was very slow. The forest, which partly encircles the town, was passed through at a point where it is used as a cemetery, the graves planted among the trees. From this the train emerged into the open plain, here cultivated in small farms and holdings. Another of the now familiar well defined villages was passed, surrounded by a common and adorned, as usual in this part of Hungary, with the three towers of the Calvinist, Lutheran and Catholic Churches, identical in form except for the weathercock, and at length after a two hours journey the puszta (or prairie) was entered upon and the train presently pulled up at the station. Even in this wild spot a large crowd greeted the party, and in the yard of the inn near by an excellent breakfast was provided.

While breakfasting, some thirty conveyances of every conceivable kind, from four-in-hand barouches, horsed with stallions, to springless hay carts, had collected without, and in these a memorable morning was spent. Crossing a bridge of many arches, built in 1802 over what was then an arm of the Theiss, but is now a shallow lake, the open plain was soon reached (fig. 79). Sparsely dotted over the vast expanse were a low herdsman's hut, a cattle shed, a well, or a grove of trees, but except for these the gaze swept on to the far horizon, the level

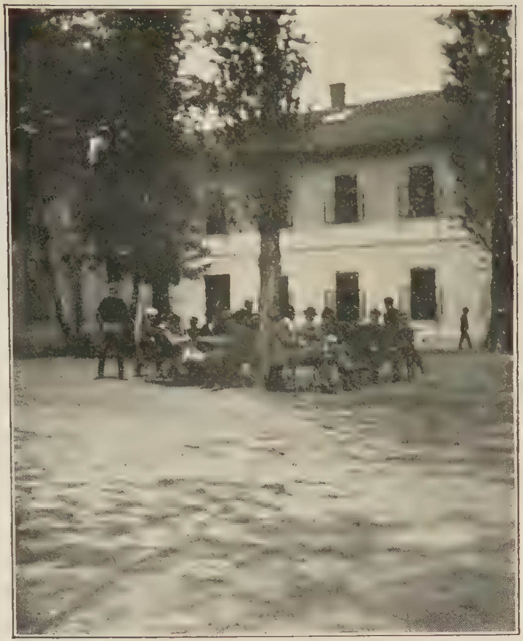

Fig 70. Students of the Agricultural College.

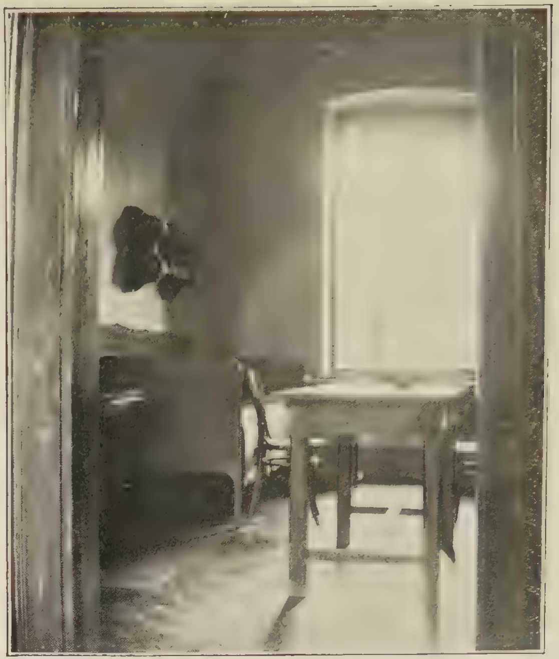

Fig 71. A student's cubicle.

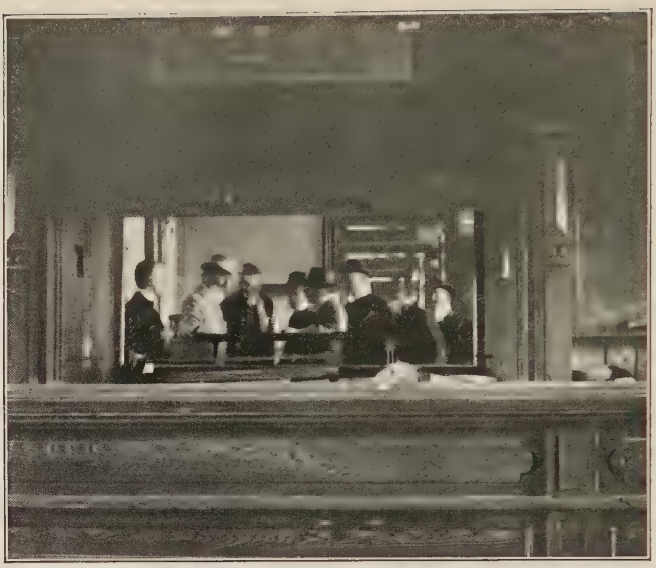

Fig 72. The chemistry lecture room; shewing contrivance for projecting apparatus in the preparation room upon a ground glass screen,

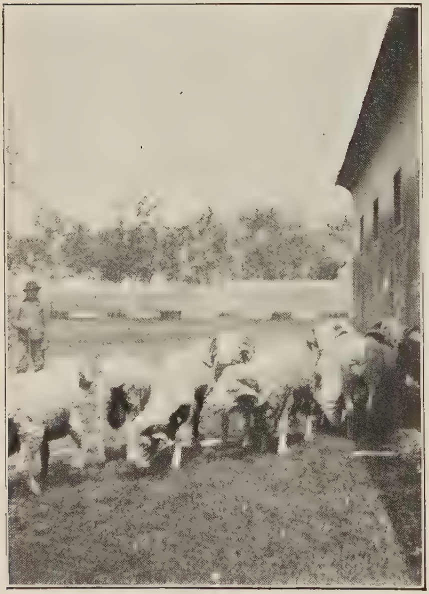

Fig 73, Rambouillet-merino rams at the Pallag farm.

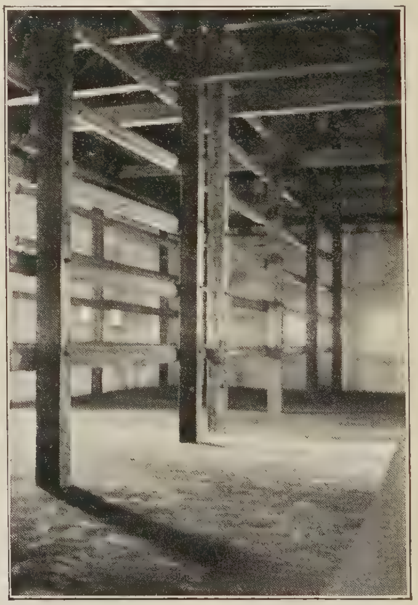

Fig 74. Interior of a tobacco drying house,- Hungarian system of curing.

of which was unbroken except where the distant Mátra Mountains were visible in the west, and a still more distant and lofty cone in the north. The weather was superb, the scorching sunshine was tempered with a delicious breeze, and the carriages swept dustless over the soft turf. As the day advanced the Fata Morgana played tricks with the senses, and the plain seemed surrounded by a fairy ocean islanded with trees; churches below the horizon rose till reflected, too clearly to be real, in the glistening water. Storks and kites, disturbed by the long procession, occasionally flew past. In places the herbage was good and plentiful, and full of clover, but there was much heavier land, impregnated with salt, growing a very scanty feed, and the water drawn from the wells was bitter. Later in the season the herbage becomes entirely scorched up. Numerous fairy rings, with interior grass much darker and more luxuriant than the exterior, presented an interesting subject for scientific enquiry.

But the chief interest of the puszta was the enormous herds of live stock. In one herd 2,150 cattle were counted, in another 1,600 working oxen (fig 80.), in another 1,200 cows and calves, in another 700 full grown three and four year old bulls grazing quietly, all these being of the pure Hungarian breed, and belonging to the citizens of, or farmers round, Debreczen, who pay so much a head for the grazing. The calves were mostly yellow, those nearest white had a brown line down the neck and a fainter one down the back. Among a herd of cattle standing in a pool of water, a few buffaloes were splashing (fig. 81). The total number of cattle this year is said to be 19,500. In the winter all are removed to the owners' farms.

On the farm there are five horse-breeding stations each containing eight stallions. These have been bred from Nonius Stallions out of 50 pedigree mares of five generations, which are also kept on the puszta and belong to the town. The stallions, which, though spirited, seemed wonderfully quiet, are kept in sheds constructed of creosoted wood, the stalls being separated from each other by a pole which, with the posts of the shed, are plaited with straw. The number of breeding mares admitted on the farm is 40 to each stallion. The foals got were said to be 80 to 90 per cent. of the mares. For the first year they are fed on oats. The herd of horses grazing this year is 6,700; in one drove 650 horses and colts were seen—a splendid sight (fig. 82).

As is the case throughout Hungary there are no fences, for labour is cheap and it is more economical to employ herdsmen than make fences. The herdsmen, whose chief business is to draw water from the wells into dug-out troughs for their stock, remain with the herd night and day, sleeping in the open and building with reeds a horse-shoe shaped protection from the wind, behind which the kettle is hung on a crooked stick over the fire. Their dress is the same summer and winter and consists of hempen underclothing and an embroidered blanket, thick and heavy, fastened by a leathern strap across the chest, and hung on the left shoulder so as to leave the right arm free, or they wear instead a sheep skin coat, the woolly side out in summer and in in winter. The horsemen, or "csikos," use a saddle consisting of a piece of canvas with stirrups but no girths and they are armed with a long whip and a lasso wound round the horses neck when not in use (fig. 84). The herdsmen and csikos get £25 a year, and perhaps contrive to add a few shillings by carving whip handles and sheep crooks for sale to visitors.* The following further particulars were supplied :—

HORTOBÁGY.

The farm of Hortobágy situated 18 miles from Debreczen and near a railway station is the property of this town. It has an extent of 70,900 acres and lies on plain level ground, where thousands of horses, cattle, sheep and pigs graze.

The original character of the farm, which is solely used for grazing, has to some extent been affected by the regulation of the river Tisza, diminishing its water surface and marshy grounds. The soil is sodaic, a brown or yellow loam, and the growth of grass low.

According to the climate of the Plains, the late frosts appear till the middle of May and the heat then comes on quickly, shortening the season of vegetation.

For some centuries past every citizen of Debreczen could give pasturage to as many animals as he liked free of charge. Now-a-days the right of a citizen to graze his cattle is limited. In 1901 the following was the number of live stock on the farm :—

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*During the round a stop was made at the house of a foreman where some very welcome refreshment was provided (fig 83). On offering the man a gratuity for his trouble, it was very civilly but firmly refused. There is an admirable feeling of pride and independence often observed among the Hungarian peasantry and especially in the case of freeholders.

Bulls	107	One-year-old Calves...	3,899
Bulls (2 years old)	343	Horses	3,862
Cows	5,916	Colts	1,122
Heifers (2 years old)	635	Pigs	2,319
Oxen	1,399	Sheep	24,529
Bullocks ...	2,297		

Each species of live stock has a separate pasturage, where it grazes for the whole summer and is only in winter driven in to shelter.

For the improvement of the horses and cattle pedigree sires and bulls are kept. In the farm stud are reared cart horses fitted to the work of the district ; since 1885 army horses and lighter carriage horses have also been bred from Nonius stallions. Only pure Hungarian cattle are bred, the best for the yoke.

Sheep breeding affords a considerable income in the shape of wool, lambs, mutton, milk and cheese. As regards pigs, only the "mangolicza" is bred ; on account of the swine fever the stock has been greatly diminished.

Besides the shepherds there are no other inhabitants in Hortobágy. The number of the shepherds is a few hundred, who, except in winter, live out in the fields. As a rule they live quite in the open, the greatest attempt at a shelter being a little fencing or a hut built like a swallow's nest with a thatched roof. They are hardened against the weather, true to their master and fond of their flocks.

The management of the estate is in the hands of a commission appointed by the town.

Great sanitary precautions are taken, veterinary surgeons examine the animals daily on the pasturage, and animals diseased in any way are immediately removed to the hospital.

It is proposed to increase the fertility of the soil by irrigation, and to transform a part of the area into plough land.

On returning to the inn, dinner was served in a long shed in the yard, beautifully decorated with boughs and flowers. Mr. Arthur Komlóssy, the Mayor of Debreczen, presided, and was supported by Mr. Anton Rickl, President of the Agricultural Society of Debreczen ; the meal was graced by the presence of a number of ladies. Peasant girls decked with the national colours, headed by the innkeeper's daughter, waited, and the inevitable gypsy band helped to enliven the proceedings. The Mayor in his speech alluded to England having provided an asylum for Kossuth and the other patriots in the dark period succeeding 1848, and hoped that the misrepresentation from which Hungary had suffered would be dispelled, and that at any rate this party of visitors would be convinced of Hungarian hospitality. It is needless to say that those words were cheered to the echo.

The return train reached Debreczen about 5 o'clock and started again for Szerencs at 7. The departure platform was crowded with the warm-hearted townspeople, and as the train steamed out of the station the party did their best by a good English cheer to express their appreciation of the warm hand of friendship held out to them and of the entirely successful arrangements made for their reception.

At 9 o'clock Nyiregyhaza was reached. During supper in the refreshment room, the Mayor of the town arrived with a kind invitation to drive round the town in carriages which had been provided, but time did not allow. Szerencs was arrived at at 11.30. At this late hour the Burgomaster and nearly a hundred townsmen were on the station to welcome the visitors, who, however, being asleep could only appreciate the honour done them when informed the next morning at the breakfast at which they were entertained in a large building adjoining the sugar factory.

Saturday, May 31st.

BARLEY EXHIBITION.

In this building a most interesting exhibition had been arranged, by the kindness of Mr. Adalbert Kovácsy, Principal of the Agricultural College of Kassa, of the barleys grown in the district of North Hungary, of which Miskolcz forms the centre. There were 56 samples of barley grown last year, and taking into account that the season had been an unfavourable one and that they were collected after the stores had been swept of the best malting grades, they proved that very good malting barley was grown in this district. The following printed particulars were supplied:—

PRODUCE OF BARLEY IN HUNGARY.

On a territory of about 2,370,000 acres 5,000,000 to 6,000,000 qrs. of spring barley are produced in Hungary per annum.

The produce of one acre varies from 2¼—2½ qrs. The weight of one bushel is on an average 52lbs. throughout the country.

The exportation of barley from Hungary, amounting to 1½—2¼ million qrs., is estimated at a value of 2 to 3 million pounds sterling.

We have transacted much business with Austria, Germany and England. The exportation of barley has been :

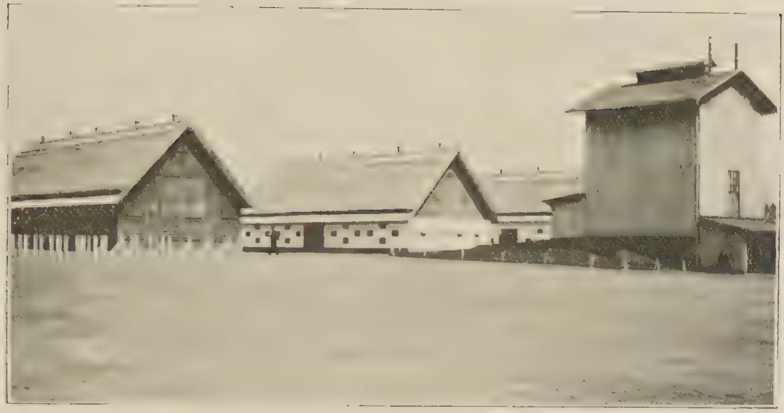

Fig 75. Tobacco experiment station on the Pallag farm; shewing Hungarian curing houses for natural and (on the right) American curing house for artificial, drying.

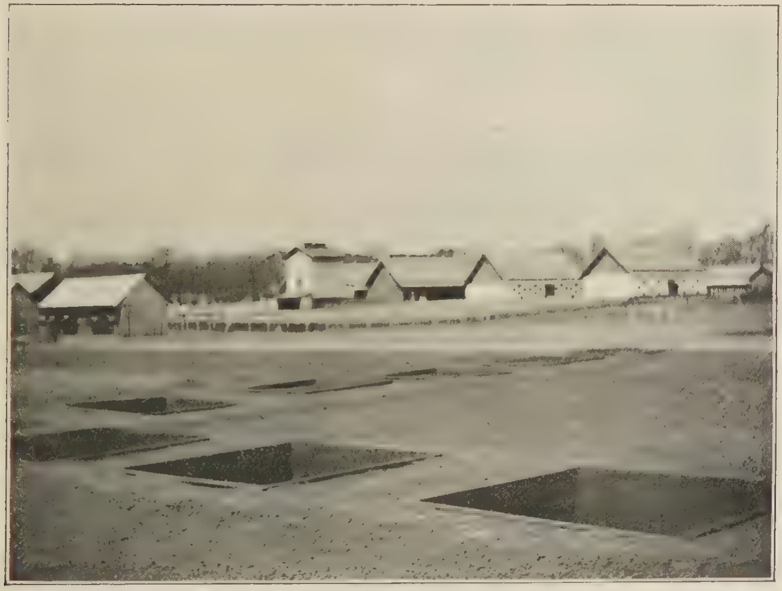

Fig 76. Manurial trial pits on the Pallag farm för testing soils from other districts.

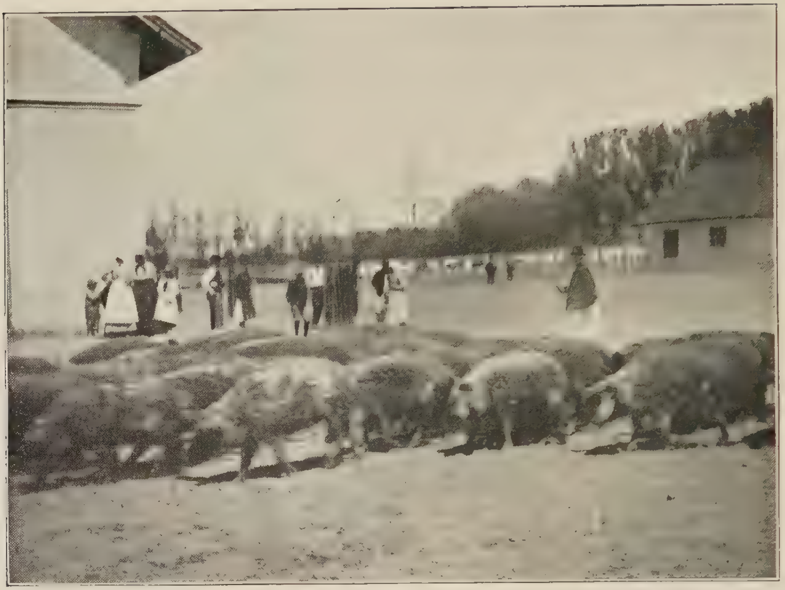

Fig 77. Mongolian swine at the Pallag farm.

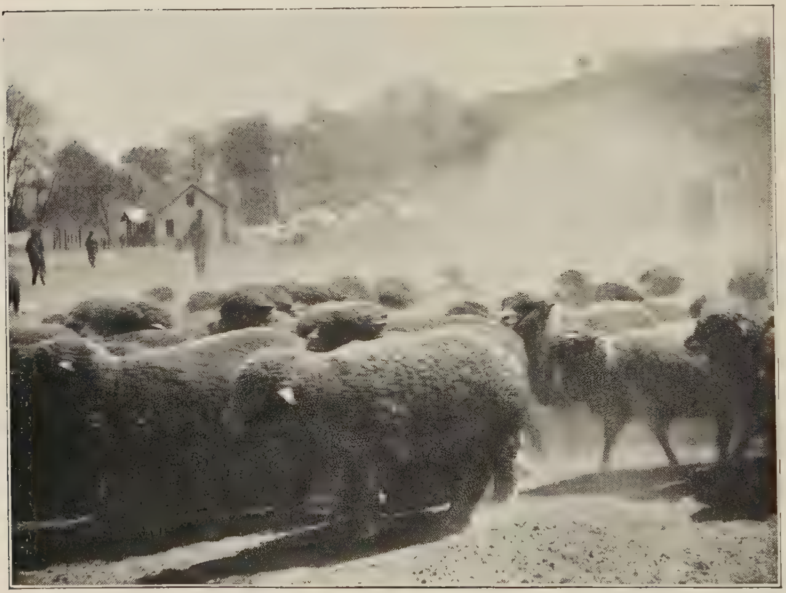

Fig 78. Rambouillet-merino sheep at the Pallag farm,

To Austria	...	1-1½ million qrs.	
,, Germany	...	⅝-¾ ,, ,,	
,, England:	in 1898	45,092 qrs. valued at	£52,000
	in 1899	49,231 ,, ,,	£56,000
	in 1900	30,947 ,, ,,	£39,000

Barley is not grown in all parts of Hungary. The following districts are foremost in the produce of malting-barley:—Abauj-Torna, Bars, Borsod, Gömör, Hont, Moson, Nyitra, Pozsony, Sopron, Trencsén and Zemplén counties.

The average produce of malting-barley in these districts is 1½ million to 2 million qrs., but of course does not consist entirely of malting-barley, as both quality and quantity often greatly vary, owing to the bad effect which unfavourable weather must necessarily have on the crop. There are many other smaller districts in Hungary, in which malting-barley grows exceedingly well.

The most important market places for the sale of malting-barley are: Budapest, Kassa and Miskolcz.

The National Hungarian Agricultural Association in Budapest arranges an Annual Exhibition of malting-barley, open from the 1st till the 10th of October. At the same time the "Association of Hungarian Landholders" in Budapest hold their annual malting-barley market, from 20th of August to the 10th of October

An annual malting-barley market is held at Miskolcz in the last week of the month of August, generally on Tuesday.

As to the date on which this market is held, information may be obtained from the Secretary of the Agricultural Society of Borsod-megye.

The following quantities of malting-barley were announced at the malting-barley markets at Miskolcz:—

	Offered.		Sold.		Price.
In 1898	20,570 qrs.	...	11,320 qrs.	...	10s. 10d.—13s. 9d.
,, 1899	27,760 ,,	...	21,900 ,,	...	9s. 5d.—13s. 9d.
,, 1900	23,800 ,,	...	19,300 ,,	...	10s. 0d.—14s. 2d.
,, 1901	29,600 ,,	...	12,690 ,,	...	9s. 4d.—12s. 4d.

The malting-barley markets of Miskolcz held at the "Vármegyeház" are generally frequented by a large number of foreigners.

Malting-barley markets are not held at Kassa; however, malting-barley can be purchased in its immediate neighbourhood and from numerous firms dealing in malting-barley.

For further particulars apply to "The National Hungarian Agricultural Association" or "The Board of Commerce and Industry" at Kassa.

THE SUGAR FACTORY, SZERENCS.

This factory is the largest in Hungary and one of the largest in Europe. During the five or six months that the factory is working, 1,750 tons of sugar-beet are consumed daily, and the daily output of sugar amounts to 220 tons. The members of the firm between them farm 30,000 acres and supply one-third of the beet root used. The hands employed number 1,500 who are engaged, while the works stand idle, in cultivating the beet root afterwards consumed.

The method of manufacture appears to be the usual one. The wort from the crushed beet is heated and mixed with milk of lime to precipitate proteid, etc., and the excess of lime is removed by carbonic acid gas. The liquors are evaporated in vacuum pans at 90° Fahr., and the sugar separated in centrifugals. A special process is used for the treatment of the molasses by which another 2 per cent. of sugar is obtained. In the chemical laboratory, every beet grown for seed is tested for its sugar yielding quality by cutting out a small section for analysis; if not up to the 14-15 per cent. standard the plant is removed from the field. By this selection a considerable increase in the sugar has been brought about and 19 per cent. is common, while some varieties of beet show a percentage as high as 20 to 23.

A great part of the sugar is exported to India, but the countervailing duty recently imposed has checked the trade and more is now exported to Constantinople and Persia. Owing to the bounty on exported sugar, it can be sold in Glasgow for half the price it is retailed at in Szerencs! This bounty is shortly to be withdrawn but it is probable that the manufacture will still be profitable, partly because of the value of the beet pulp for cattle feeding.

THE VINEDRESSERS' SCHOOL, TARCZAL.

A long string of carriages was now in waiting for the excursion to the mountain vineyards. The roads were metalled with trachyte but though the surface was good, the dust was so bad that each traveller was soon as white as a miller. After crossing a wide valley, a gentle ascent led up the mountain side till the vineyards were reached.

An account of the ravages made by the phylloxera in 1886 and following years is given in the introduction, and still not more than 60 per cent. of the desolated vineyards have been reclaimed, the higher and poorer land being still out of cultivation.* Owing, however, to the better methods of culture introduced as a result of the disaster, more wine is said to be now produced in Hungary than formerly over the whole area. The closing of the vineyards led to emigration to America, which, once begun, proved a serious menace to Hungarian farming, the annual emigration, it is said, amounting to 100,000 persons. In this part of Hungary agricultural labourers earn only 1s. 2d. to 1s. 6d. a day and the women just half, and they are attracted by the higher wages earned in America †

The Vinedressers' School (fig. 86) was established by the Government as one means of aiding the recovery of the vinegrowing industry. The area is 170 acres, including 60 acres of vineyard, seven acres of nursery for raising American vine stocks (which being harder rooted resist the phylloxera) for distribution among the winegrowers, and 36 acres of nursery for fruit trees for distribution among peasant farmers. The number of students attending is 18; the course of instruction, which is almost entirely practical, occupies one year; the fees amount to £11 13s. 4d., including board and lodging. The school contains an excellent museum of implements used in viticulture.

An interesting demonstration was given of the methods of vine culture and eye grafting. The stem of the shoot from an American vine stock was cut down the middle and in it was inserted the shoot of a cultivated vine cut V-shape, and tied up. A vine leaf was sometimes used to shelter from the sun, but no clay or wax. The year after grafting, the new vine can be layered and the layer disconnected from the parent stock. Besides this "green grafting" carried on in June, "winter grafting" is performed indoors in March. Another method for rendering the vine immune to phylloxera is by injecting carbon bi-sulphide into the soil at the roots, by means of a specially constructed pump. This operation, and spraying the vines with blue vitriol solution by means of a knapsack sprayer to ward off the peronospora (a fungus which attacks the leaves), were also seen. All these operations, together with the cutting down of the vines in the autumn, and the tying of the young shoots to the stakes in the early summer are performed by the students of the school. The orchards were not seen at their best for all the peach trees had been killed by frost in April. Both orchards and vineyards were full of weeds, and there seemed to be an absence of that thorough cultivation noticeable in all the farms and estates elsewhere visited.

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* Previous to the phylloxera epidemic, the vineyards were worth £500 to £600 per acre. The loan given by a private bank subsidised by Government for the renewal of the vineyards with American vine stocks is for six years, after which it must be repaid by payments extening over fifteen years.

† Much higher wages are earned at harvest time when a family will get as much as 8s. a day, *i.e.*, one tenth or one eleventh of the crop harvested. It is these high wages that attract Slavonian labourers from Galicia.

THE ROYAL CELLARS, TARCZAL.

The drive (fig. 87) was now resumed to the village of Tarczal. The chimney tops were covered with flat slates, with apertures below for the smoke to escape, and on most of these were storks' nests containing young birds, which the parent birds were feeding. As elsewhere, these birds are encouraged by the peasants and return to the same nests each spring.

The Royal Cellars are 200 years old, and consist of narrow galleries of immense length cut into the solid rock. The temperature is 50° Fahr., and uniform winter and summer. Three casks of the finest Tokay, destined for the royal table, were pointed out. Before leaving the party were given the rare opportunity of sampling the various brands of this unobtainable wine, some of it of almost priceless value. One of the specialities was a syrupy liqueur, made from the drippings of the vat before the grapes were pressed. It possessed a magnificent luscious flavour, and was worth £83 per cask of eight gallons.

THE KING'S VINEYARD.

On the mountain side, facing full south and overlooking the great plain, which extends without a break to the borders of Servia, over 200 miles away, is the vineyard where the Royal Tokay is produced (figs. 88 and 91). Its aspect and elevation, combined with the rich soil of disintegrated trachyte, are the conditions which render the produce of the vineyard the most costly wine in the world. The arrival of the party was not unexpected; a triumphal arch adorned the entrance, and Count Alexander Andrassy, President of the Hegyalja Agricultural Society, had come by train from Budapest, and by motor car from Szerencs, purposely to speak a welcome in the name of the vinegrowers. Superintendent Vazul Pogány and Director Count William

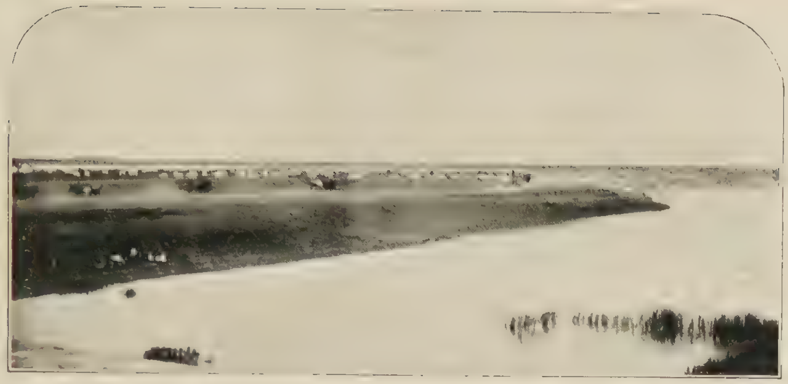
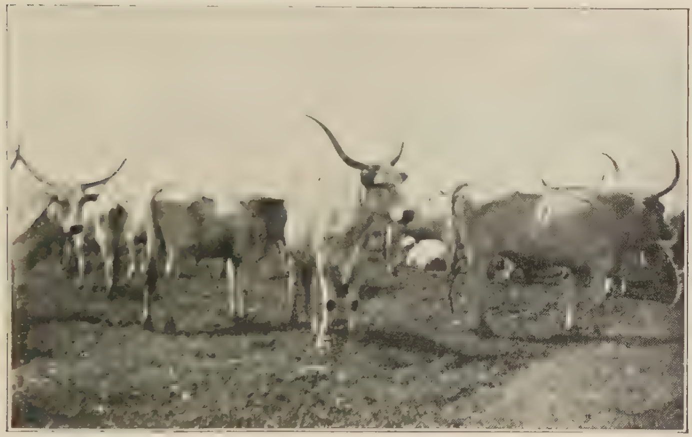
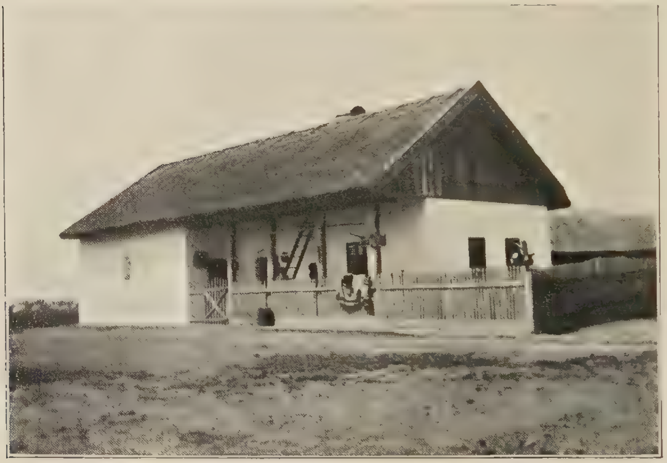
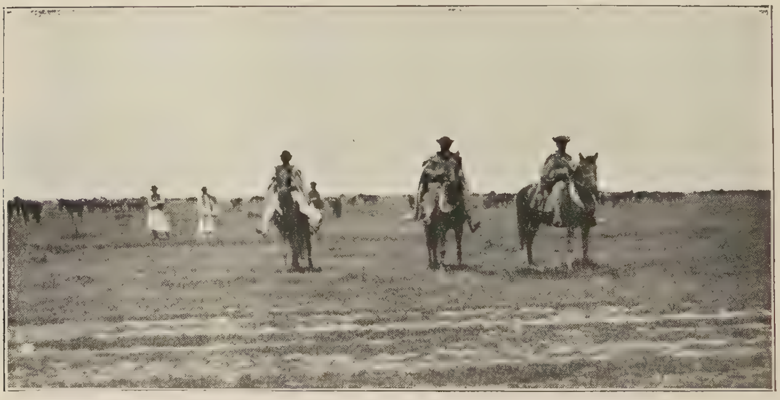


Fig 79. First view of the Hortobágy puszta, (70,000 acres) belonging to the town of Debreczen.



Figs 80 and 81 Hungarian cattle and buffaloes (in the water) on the Hortobágy.





Figs 82, 83 and 84. Horses, a foreman's house, and Csikos on the Hortobágy puszta.

Szirmay, who kindly acted as guides through the vineyard, were also present.

In the vineyard women were at work tying up the vines to the stakes, and men were spraying against peronospora with knapsack sprayers. At distances of about 400 yards from each other were the now familiar hailstorm dispersers, consisting of a strong iron detonator, attached to which was an iron funnel, 10 or 12 feet long, pointing skywards (fig. 85). The charge was a good quarter-pint of coarse black gunpowder, and this being ignited by a fuse a big explosion was caused, which thrilled the air like a rocket high overhead. These are fired whenever black clouds gather which might bring hail, and are supposed to be effective for a radius of 200 yards. They were used in every vineyard visited, and though little faith is placed in them, the fact remains that no damage by hail has been done since they were introduced three years ago.

The large room in which luncheon was taken was decorated with the legend " Éljen a Király " (Hurrah for the King). The loyal toast was given by Alderman Fitch, in a few happily chosen sentences, and drunk standing by all —Hungarians and English— with respectful fervour and enthusiasm, and Count Andrassy then gave the King of England, which was as warmly honoured.

Now followed a drive of unexampled beauty. After traversing the south face of the Tokay mountain, the picturesque village of Tokay was reached, after passing through which, one was suddenly confronted with the broad waters of the Theiss which here reinforced with the river Bodrog, swollen with the melting snows and recent rain in the mountains, had flooded the meadows for miles and formed a great lake extending almost to the horizon (fig. 89). Then passing up the valley of the Bodrog and over the col connecting the Tokay mountain with the Hegyalja chain, the western side of the mountains was regained. The road passed a school for vineyard labourers, and led through the village of Zombor where a reception by the President and members of the Tállya District Wine Growers' Association, took place, and finally reached Tállya (fig. 90).

TÁLLYA.

Whether the reading of English books was answerable, for in this remote town an English library existed half-a-century ago, or whatever the cause, another great reception awaited the party here. A very interesting exhibition of the choicest Tokay and Tállya wines had been arranged, about which all that need be said is that, for their purity, wholesomeness and delicacy, they only need to be introduced to the English market to find customers. The vintages of 1847, 1855, 1883, 1898 and 1899 were sampled, the second and the last being generally pronounced the best.

After a visit to the cool wine caves in the mountain, dinner was served in the Town Hall, among those present being Mr. Julius Szabo, the President of the Tállya District Wine Growers' Association, and Mr. Adalbert Bernáth, M.P. The hall was small, but the guests were many, and hosts and guests were in the liveliest humour, the daughters of the wine growers, who had the kindness to wait, had also the privilege of talking, and the gipsy band did its best to make itself heard in the babel. It was a scene of pure enjoyment never to be forgotten, and when the room was cleared and dancing began, one began to realize that "*Extra Hungariam, non est vita, si est vita, non est ita.*" The drive back to Szerencs in the darkness was less enjoyable, but Hungary is a country of extremes ![*]

Sunday, June 1st.

After travelling through the night Kassa was reached at half-past five the following morning. Here is an agricultural college, ranking equal to Debreczen, and presenting many new features of interest, agronomics, rather than live stock, being the strong point; unfortunately, time did not allow of stopping.[†] The journey from Kassa to Poprád Felka lay through beautiful and more and more hilly country. There were signs of the mineral wealth of this country being developed,[*] aërial railways being used to bring ore from the mountains to the blast furnaces in the valley. Against the line rows of spruce firs had been planted, or hoarding erected, to prevent snow from drifting on to the line. At length the magnificent range of the Tátra mountains, still covered with snow from base to summit, burst into view, and at 8 o'clock Poprád Felka was reached.

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[*] One is perhaps inclined to dwell too much on the perils of the road. Our Hungarian friends never showed the smallest anxiety, and to most of the English party the splendid pace kept up added intensely to the enjoyment. But there were two serious accidents, and scarcely a single drive was accomplished without a mishap that might have been serious. The skill of the coachmen was admirable, they showed perfect coolness in every emergency.

[†] I visited this college in the autumn of 1901. It is exceptionally strong on the horticultural side, and the fruit gardens are well worth visiting. Being in a mountainous country the system of farming differs from that of the other colleges visited and is very interesting. The college buildings have recently been largely extended and are as up-to-date as those at Debreczen.—THE COMPILER.

THE TÁTRA MOUNTAINS.

The line from Kassa to Oderberg with its branches is the property of a private company. No expense was spared to render the journey agreeable, special trains being run and Mr. Eder, the manager, acting personally as conductor throughout the day Breakfast was taken on the mountain railway between Poprád-Felka and Tátra Lomnicz, in saloon restaurant carriages with glass sides affording an uninterrupted view of the magnificent scenery

Like the Yellowstone Park in America, the Hungarian Government has acquired a great part of the Southern slopes of the Tátra mountains as a national pleasure resort, and these domains having been placed under the control of the Minister of Agriculture, it was a matter of duty as well as pleasure to visit this beautiful region. At Lomnicz, Councillor August Tavi and Inspector John Földi, both of the forest department in the Ministry of Agriculture, were waiting to receive the party and under their guidance a most interesting and enjoyable day was spent.

Tátra Lomnicz consists of a large hotel-restaurant, with *dépendances*, a bath house fitted up in sumptuous style, and the Calvinist and Catholic churches. It is surrounded by splendid pine forest backed on the north with snow-clad peaks (figs. 94 and 95).

The Minister of Agriculture in his thoughtfulness had provided for an English Church service this Sunday morning.

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[*] No mention has been made of the mineral wealth of Hungary, beyond casual references to gold and coal. But the Carpathians are rich in minerals. Among these is salt. The salt mine at Maramaros Szigeth, a subterranean chamber 400 feet deep and nearly half-a-mile long, excavated in pure white salt, may be ranked as one of the wonders of the world. This and several other minerals are utilized in a huge chemical works in the neighbourhood. The district is well worthy of a visit and travellers are received with the greatest kindness.—The Compiler.

This was surely a compliment to the national character. Mr. S. H. Tucker had travelled through the night from Budapest to officiate. The service was held in an annexe to the hotel, fronted with glass, and thus it happened that behind the reading desk the mountain peaks formed the altar covered with an altar cloth of glistening snow! After service there was time for an hour's climbing or a hot bath in the marble basins of the bath house. Luncheon provided by the kindness of the State was served in the hotel, and a start was then made in carriages for the Lake of Csorba at the other end of the mountain chain. The drive is perfectly unique; skirting the southern face of the mountains, the road leads through splendid pine forest and over brawling torrents (fig. 96). To the right are always the snow-clad summits, to the left the broad valley of the Poprád, beyond which is the Liptau range, also covered with snow. Half-way is Tátrafüred, the oldest of the settlements, where guides with ice axes were prepared for the mountain ascents. The road was excellent and metalled with granite. The State forests are well looked after; few trees are felled and large areas have been replanted with young trees, for raising which there were nurseries, it being the object of the Ministry, not so much to render these forests profitable, as to preserve the charms of the district. A pine with drooping branches, having the peculiarity of flourishing in boggy ground, was observed here. The mountains abound in game In one drive last November it is stated that 250 chamois were got together; 77 lbs. is a common weight, or nearly 22 lbs. heavier than those in the Tyrol. There are bears in the forests.

The lake of Csorba (fig. 97) is 4,600 feet above the sea and 1,900 feet above Tátra Lomnicz. Snow still lay in patches on the ground. The settlement consists of a hotel and several log built villas, the round logs filled in with triangular splines of wood inside and out, and on the inside covered with reed matting fixed by wires and plastered over, and roofed with wooden shingles. A rack and pinion railway has been recently constructed, and a deep cutting of the line has revealed the bed of glacial moraine in which the lake rests (fig. 93).

At dinner, the visitors were once more guests of the State, whose parting gift was a polished section of pine wood, bearing a photogravure of the Lake of Csorba. Councillor Ottlik had arrived from Budapest specially to represent the Minister of

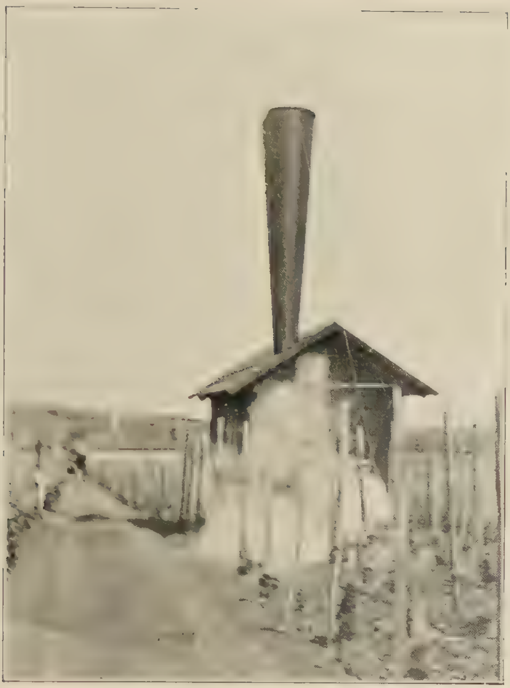

Fig 85. A hailstorm disperser at Tokaj.

Fig 86. Vine dressers school at Tarczal, shewing vineyards and hailstorm disperser on the hill.

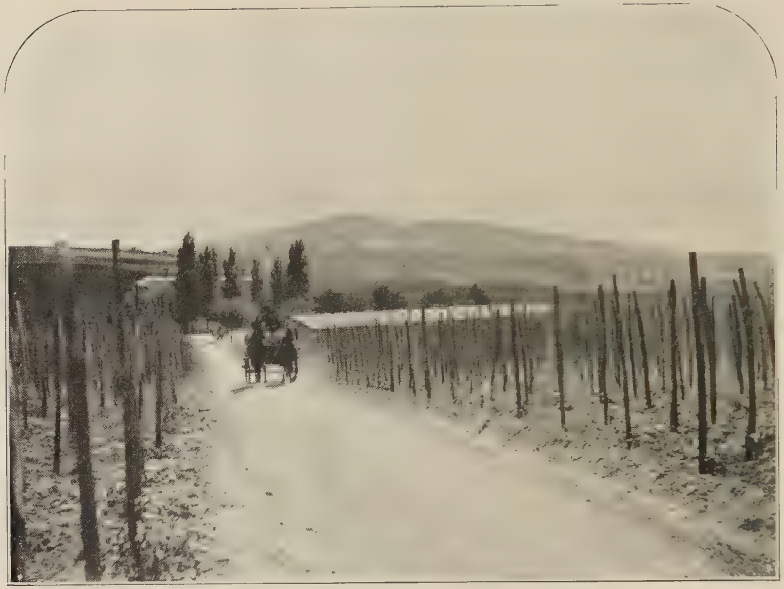

Fig 87. The Tokaj mountain from the vineyards at Tarczal,

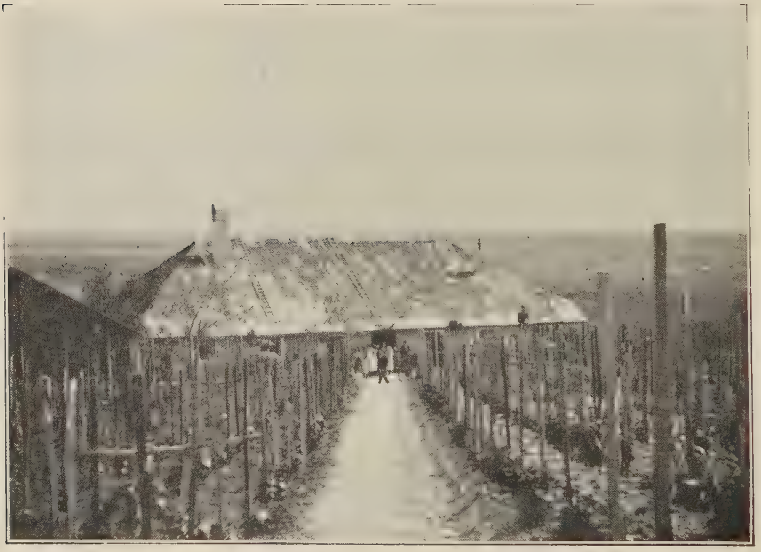

Fig 88 The King's vineyard at Mád Tokaj where the Imperial Tokay is grown, looking towards the plain.

Agriculture at this parting festivity. Telegrams of thanks, as warm as mere words could make them, were dispatched to the Prime Minister, to the Minister of Agriculture, and to the President of the National Agricultural Society, for the magnificent reception the party had received in Hungary.

And then to our conductors, György, Szilassy, Goger, we *tried* to express our obligations.

The sun was setting as the descent by the funicular was made to the railway station in the darkening valley, where the railway carriages were waiting. Two hours later at Ruttka, the last good byes were said to Hungarian friends, and at Oderberg, the sleeping carriages that had been "home" for a fortnight were vacated. The visit to Hungary was over.

Berlin was reached on the Monday morning and after spending a night and two days there, the journey to England was resumed and London reached on the Wednesday evening.

* * *

It has been thought advisable to append to this account of the Visit to Hungary, the "notes and comments" of individual members of the party. Some of the views expressed are doubtless based on very partial knowledge, and in reading them, this should be very carefully kept in mind. It will be found that there are considerable divergencies of opinion, and it is desirable therefore to summarise very briefly, a few of the points on which there is general agreement. These are :—

(1) The advantage to agricultural industry of a Government always ready to promote every branch of agriculture by the endowment of agricultural education and research, and by aiding commercial organizations designed to raise the quantity, quality and sale of agricultural products, and who, to achieve this end, are not unwilling themselves to embark on industrial enterprises: (The question is asked—to what extent does this State-aid and trading discourage individual enterprize?) (2) The excellence of the organization and record of work of the National Agricultural Society and County Agricultural Societies, the latter in close touch with the National Society and with the Agricultural Ministry on the one hand, and with the farmers of their respective localities on the other; these societies not confining their energies to the holding of an annual show, but extending them to everything likely to add to the prosperity of the farmers

(3) The advantages derived, where the management is efficient, from co-operation in industry and commerce, especially exemplified in the milk distributing and market-hall supply societies' and the model wine cellar in Budapest, in the village communities as possessors of breeding bulls and stallions, and in the credit banks: (4) The importance of associating teaching and research as is the case in all the technical schools and colleges: (5) The usefulness of the system for raising good stallions and bulls on the State stud-farms for public use by which the breeds of horses and cattle in Hungary have been so greatly improved; the same applies to seeds: (6) The remarkable success in the rearing of calves, and the desirability of imitating Hungarian methods in this respect: (7) The propriety of the tendency towards intensive cultivation of the land, in breaking up poor grass and cultivating for dairy cattle forage crops, *e.g.*, winter peas and winter barley, and other mixtures for cutting green, a far greater quantity of stock being thereby maintained and the land improve in consequence: (8) The importance of the cultivation of beet for sugar, which, even after the withdrawal of the bounties will, it is thought, be profitable, owing to the value of the refuse pulp as cattle food and the consequent saving of the expense of growing mangolds.

A glance through the foregoing pages will shew that an immense amount of information has been gained upon these subjects and also upon crops and stock unfamiliar in Great Britain, the rearing and feeding of horses, special industrial processes, etc., etc., but beyond all this is the encouragement and inspiration derived from a journey through a purely agricultural country where, by the enterprise and energy of an enlightened people, the rapid progress of agriculture is fast increasing the prosperity of the nation.

NOTES AND COMMENTS.

Being the views of individual members of the party, each contributor being alone responsible for the opinions expressed.

Before leaving Hungary we were especially requested not only to report the good things we had encountered, but also to criticise whatever struck us as being capable of improvement. I feel some difficulty in offering any criticism, as I feel that ignorance of the national circumstances makes any criticism of mine of little value. National character is evolved slowly, and what seems best to English eyes might prove fatal to the best interests of Hungary. So anything I say must be taken not as a criticism on Hungary, but as what would have been my feeling, had I found the same conditions in English territory.

Politically, Hungary is in much the same condition as the Athens of Pericles, a country full of progress, enlightenment, and charm. But its splendour rests on a basis of inequality; probably not 10 per cent. of the inhabitants have a vote, and the low rate of wages puts the labourers into practically a state of vassalage; apparently this state of things is being corrected by education and emigration. The smallness of the electorate increases the danger of corruption in elections, but the happiness of the people possibly shows that Hungary is not yet ripe for an extended suffrage. The housing of the working classes is far worse than in England; four families often occupy a single bedroom, but this is no hardship, provided there be sufficient air space, unless the people feel it to be so, and so far as we could learn there is no abnormal immorality.

Land hunger, as in Ireland, has led to excessive sub-division of the land, it being divided equally among the descendants of the owner. In some cases this has led to limitation of families, as in France; in other cases to infinitesimal holdings quite incapable of sustaining a family. It would seem an easy remedy if the legislature passed an act prohibiting sub-division of land into plots below a specified area or annual value; but in this matter we cannot throw stones, as we have allowed the same process to go on in Ireland. It is probably the sub-division of lands which has kept up the practice of congregating in villages, now the rule over a large extent of country. This practice is said to have arisen from the need of self protection from the Turkish raids in the past. In some districts where there are vineyards, or large holdings, each farmer lives on his own land, but elsewhere there is an immense waste of time in going sometimes five or six miles to and from work. There is also much unnecessary haulage of forage to the farmstead in the village, and of manure from it. The wonderful management of the Government farms is a great object lesson to agriculturists of all nations; but the question arises whether Government and municipal enterprise do not diminish the initiative energy of the citizens. It would seem that Hungary's great want is to develop the mercantile faculty, so that its produce may be exploited to the best advantage. It is possible that Government industry may be waited for by those who should undertake the enterprise themselves.

It rather looked as if the Danube with its magnificent waterway and mineral wealth were being sacrificed to the success of the national railway; certainly it might be made a great international thoroughfare with advantage. In some ways Hungary seemed to me, like a man who has grown rich quickly, to spend her money too lavishly on indifferent objects, although surrounded by crying needs. Thus, the road on the left bank of the Danube seemed to have little purpose unless to vie with the work of the Romans on the other side; but of course there may have been a military necessity. Love of display seemed to show itself in the gorgeous Houses of Parliament—too magnificent for our English taste; expensive ornamentation of railway stations, such as was going on at Temesvár, seems quite unnecessary and hardly worth doing, unless it has the effect of inspiring the people with some great and noble aim. It is possible that all this magnificence may be intended to impress the crowd with pride in the national property, but if so surely the subject should be of an historical character, such as the Krieges Allee at Berlin—the most impressive national historical work that I have ever seen!

With regard to farming, with one exception, all the institutions we visited were in a high state of cultivation, and so clean and cared for, that we could show no parallel at home, unless on a very small scale, nor would it pay us to do so with our high rate of wage. It occurred to me, however, that it would pay them to plant more timber in belts. This would break the force of the winds and provide fuel for the winter, besides much wanted timber. Every effort should be made to stop the practice of using straw as fuel, a practice which must in the long run impoverish the land.

Now that mutton has supplanted wool to a large extent in value, it would probably be worth while introducing some edible sheep, instead of the merinos, at any rate as an experiment in some of the county schools.

In England we should say that the expense of some of the institutions is too great for the good achieved. We should have said that the poultry and bee farms of Gödöllő might with advantage have been made branches of an agricultural or horticultural school, while, with similar plant and accommodation, we should in England have had very many more students receiving instruction than was the case in several of the Government schools, *i.e.*, according to our idea, the cost of each student per head, reckoning both capital and annual expenditure, was excessive. (Without going into figures closely, the Debreczen College seemed more economically contrived than any other school).

These remarks are not of sufficient importance to lay stress on them, many of them may be irrelevant but it seemed churlish not to do what one could to answer any question put by our most kind and hospitable hosts. We have learnt so much ourselves of the agricultural skill and industry of the Hungarians, and above all of their friendship for England, that it would be a great pleasure if we could find something to teach them in return, besides the patent fact that the friendship for our country is reciprocated.—C. B. RUSSELL.

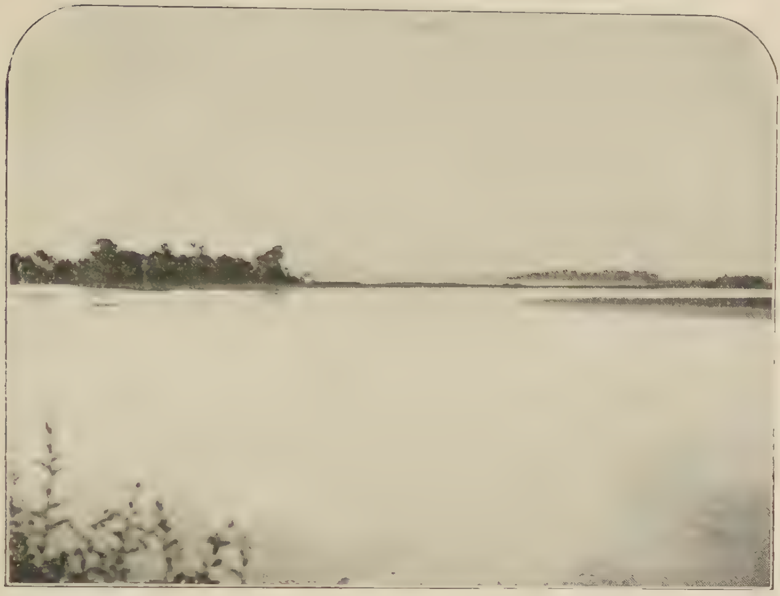

Fig 89. The river Theiss in flood, from the village of Tokaj.

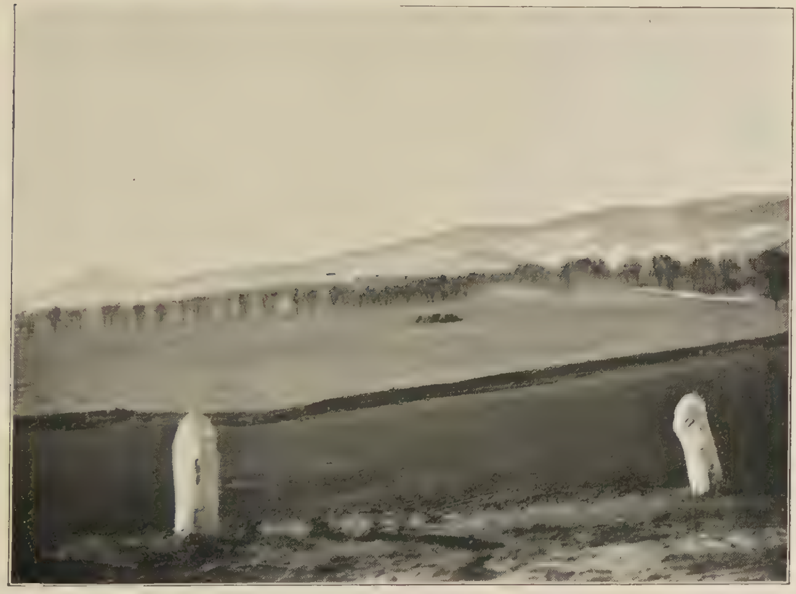

Fig 90. The village of Tályа, shewing the slopes producing some of the best Hungarian wines.

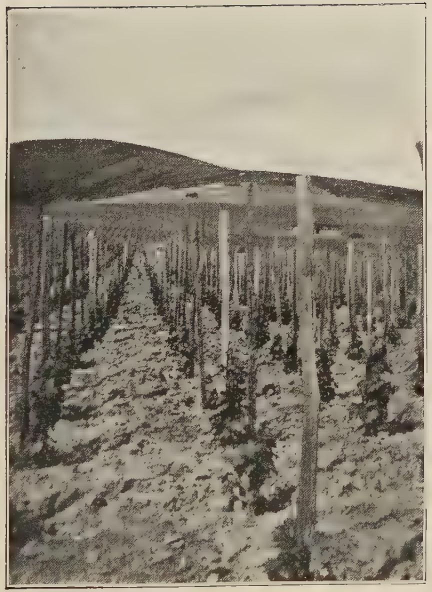

Fig 91. The King's vineyard at Mád Tokaj, looking upwards.

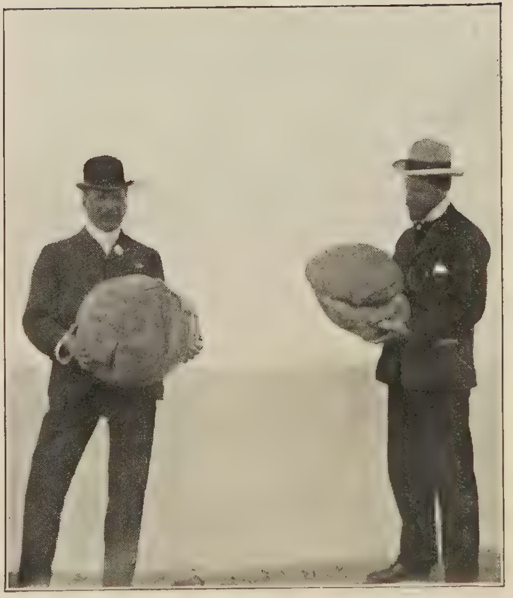

Fig 92. Rye bread, staple food of the peasants

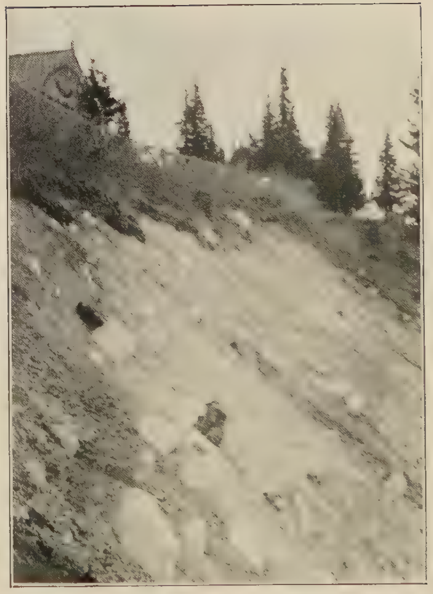

Fig 93. Glacial drift with boulders on the lower slopes of the Tátra mountains, from which, by denudation, fertile soil on the plain is produced.

I was very much struck with the manner in which the Government and people all work together to secure the same end, namely, to make agriculture prosperous.—THOMAS BRADRIDGE.

The chief thing to learn from farming in Hungary is the way they grow large forage crops, which enables them not only to keep large herds of cattle on arable land, but also to keep their land clean without the necessity of wasteful fallows. The Hungarian cattle, beyond their picturesqueness, I do not admire, and think that when the people taste the beef of almost any of our English breeds they will want to import some of our cattle. The cleanliness of the cow stalls and in fact of all the farm buildings is admirable; this I attribute very much to the supply of cheap labour.

Their very fine breeds of horses I consider very suitable for harness work, but there were none that looked like training into valuable hunters. Of all the breeds I like the Arabian stock best. I also admire the way the horsemen treat and drive their horses; they train the young ones admirably and take a great interest in gentling them. The smart appearance and good driving of the coachmen is doubtless to a great extent due to their military training. There is determination and thoroughness in everything the State takes up, the results giving examples for everyone to follow; but I suppose Englishmen are too individualistic to care for State control.—H. TURNER.

I do not think we could learn very much from the cultivation of the land; it is naturally adapted to growing good corn, is easy to work, and mostly requires no ditches or furrows to carry off the water, the porous subsoil doing this, while the plentiful supply of cheap hand labour makes the farmer independent of the expensive machinery necessary in England.

The horse-breeding is one of the things we might well take a lesson from; all through our journeyings through the country I hardly saw a badly bred horse, and our own horses will not compare in any way with those of Hungary taken as a whole. The government are doing great things in encouraging the people in every way to keep and to breed the best horses only, and I consider it sets a good example in this matter that any country would do well to follow.

The cattle impressed me as being well selected as best suited for the needs of the country. At a cattle show in England we see many different breeds of beasts, while in Hungary, having found the kind of animal best suited for their use, they do not change the stock except to improve upon the one they have. This, I think, is another lesson we ought to learn.—JAMES PAGE.

If we grew more green crops and less mangold our land would be much cleaner for the corn crops; cattle will fat well without mangold.—ABM. F. BARNARD.

The horses were a splendid lot and good trappers when driven together, but said to be ill-mannered in single harness. The riding horses are excellent, but with shoulders not so good as could be wished when compared with English hunters. The sheep are very poor from a butcher's point of view. The farmers, being believers in co-operation, make money through doing without the middle man.

The soil is splendid, but we gathered that wheat never yielded more than 4½ quarters per acre. The quality of the wheat is superb, combining good colour with great strength, this being due to the good soil together with the severe winter and very hot summer (like North America). But for this, Hungarian milling could not exist. The milling of Hungary has a great name because the Hungarians first started grinding with rolls instead of stones, but England has now got a long way a-head in the equipment and management of flour mills. In the Hungarian flour mills are men to handle the products and convey from one machine to another, which should be done by mechanical means; the rolls have no exhaust and the purifiers are mostly of the gravity-air type, *i.e.*, without sieves; the dressing is done on plansifters which necessitates a spare set of sieves being kept for each machine, a costly item. The Hungarians are content to eat the low grade flour mixed with 10 per cent. of offal (bran, etc.), which makes a dark yellow loaf of bread (supposed to be rye-bread by most of the party), with a crust dark brown and tough as leather, and sour in flavour, partly perhaps due to the yeast used. Thus they obtain 80 to 85 per cent. of so-called flour from the wheat, whereas in England only 73 per cent. is obtained, the people here not liking to eat bread made from flour containing 10 per cent. of bran and middlings.—S. P. MARRIAGE.

We found the Hungarians not part of a nation, but unquestionably themselves a nation, possessed of that wholesome patriotic feeling which tends to ascendancy and some of us thought that if given "a fair field and no favour" they may as the years roll by create a great Empire in South-east Europe; we found a Government which takes a lively interest in the pursuits of its people —to such an extent that some of us fear it may tend to destroy individual initiative; and we realised in the Hungarians a kind-hearted people, most friendly to this country and thinking better of us than we, perhaps, deserve.

We could not but admire the perfection of the arrangements and the superb completeness of the fittings in the newly-erected stations for experimental purposes in Budapest, and the thought crossed the mind that the conception of the establishment must be greater than the necessity. Still those who find the money have the sole right to select the tune. I am glad to learn that amidst so much of feeling and effort fervidly nationalistic and commercially adventurous, there were those inclined to do what they could for the betterment of the lowliest, yet most useful, section of the country's agriculturists.

I wish that more of our countrymen and women could visit the fertile plains of Hungary, the baths of Hercules, and the Tátra group of the Carpathian mountains, and know of no reason why tourists should not flock across the former to see the land, and get to its health resorts, except that the hotel accommodation outside Budapest, especially in the lavatory department, is not what we expect it to be. With a little expenditure in that direction, and after a few consultations between the Hungarian Government and Cook's, Lunn's, and Gaze's folk, I affirm that each summer hundreds of bright English sovereigns and thousands of American dollars could be deposited in the land of Kossuth the patriot.—J. H. BURROWS.

Perhaps the most practical lesson, I feel we, as a country, could learn from them, after seeing all that the State is doing for agriculture there, is that our own Government could do very much more than they do, *especially through the medium of our agricultural societies*, to help farmers and to induce people to stay on the land.

The National Hungarian Co-operative Credit Association does a large business with farmers. I gathered that the rate of interest charged was somewhat high. If interest and principal were assured by the English Government, we should be able to run agricultural credit banks on better terms. Help of this kind would often tide farmers over a difficult time, while getting money at usurious rates means further trouble and often ruin.

The Hungarian miller has two advantages over our country miller (1) the strong glutinous native wheat and (2) the local demand for all the low grades of flour which enables him to make a fine super of only 10 per cent. Eight grades of flour are made in Hungary, here only three, for our millers would be left with the lower grades quite unsaleable except for cattle feeding.

We can learn something respecting forage crops; not only are lucerne and clover grown largely, but for early cutting mixtures of winter barley, peas and rye. The cattle being all fattened in covered sheds, even in summer, a round of green crops is a necessity. Roots for cattle feeding are seldom grown.

We saw and heard quite sufficient to convince us that there was not any necessity to have sent any bad or even moderate cavalry horses to South Africa, or at exorbitant prices. Any number of good cavalry horses were to be obtained at about £25, though not many heavy enough for artillery purposes. Even in the fens and light lands of England, it would not pay us to breed at this price, while we can make £50 to £70 for Shires and Clydesdales which will earn their keep from 2½ years of age.—T. J. SLATER.

The State farms supply selected seeds to farmers at a reasonable market price It could not be done very well in England, as it would do away with a large class of traders. In Hungary, however, there are no middlemen, and the system is a grand thing for the small farmer. It is carrying out the same principle as prevails with horses and cattle, *that only the best should be reproduced*; in short that the fittest stock as well as corn and seeds of all classes should survive.

No matter in which direction one turned, it was only to be struck with the minute attention given to details, this being one of the secrets of success of Hungarian enterprises. It was interesting too to notice in every instance how kindly cattle were treated. We could not adopt their system of farming as we live under vastly different conditions; at the same time State encouragement of the horse-breeding industry might be considered by our authorities with advantage.

There must be an ultimate benefit to this country through the county councils organizing such trips as this, which create friendship and harmony and a direct exchange of views and opinion between those actually concerned in the commerce of the respective countries, which cannot but bear fruit in the future. ROBERT BALLS.

The best methods are not followed in the make of farming tools, *e.g.*, the handles of the shovels are long like that of a hay fork, consequently the worker's purchase is less and I should think if he works hard his wrist aches sooner. Going from farming to another branch of industry, I saw that their bricks were 11½ inches long by 5½ inches broad, and an English workman tells me that this breadth is beyond the grip of a man's hand, and cannot be so convenient for laying as our own size; a man must take two hands to it. Their finished brick work, even in Budapest, is not pointed, the mortar in the joints being quite half-an-inch behind the face of the brick, and one sees that their trowels are not made for the work, being rounded at the end. The Hungarian architects behave with a boldness which would surpise their brothers of the craft in London, who might with advantage ramble through Budapest and take notice of the methods of ornamentation. If they pondered these lessons we might get greater variety and brightness in the streets of English towns.

I could not but notice how on the Government estates some effort was made to set the inhabitants a pattern of taste. At Kisbér, the officers' quarters and the chief stables were picked out in cheerful colours of which white, salmon, bright green and lavender were the prevailing tints, and a very handsome garden was laid out with a view to get as much landscape as possible. At Mezöhegyes the aspect of the stables and riding school was still more pleasing. Here and there were acacia trees whose light green spring tints set off the buildings well and the whole was much pleasanter to look at than the barracks of Woolwich, Chatham or Portsmouth.

We were pleased at the complete museums annexed to some of their technical schools, which included in some cases specimens of all kinds of stone and wood used in building and cabinet making. Our own Technical Instruction Committee could with advantage follow this example and furnish all their technical schools with samples of all materials used in local industries.

Above everything else we were struck with the efforts of the Hungarian Government for the improvement of agriculture; but Hungary is almost entirely an agricultural country, England a commercial and manufacturing one. In the former, about 25 per cent. of the population are engaged in agriculture, in the latter, about 3½ per cent. The franchise in Hungary is pretty popular and the electors are almost sure to choose men whose interests are identical with their own, also the men who can conveniently serve in Parliament are closely connected with the land. We could not hear that any great things were being done for other branches of industry.—George Jackson.

The Mongolian pig as a lard maker does not leave much to be desired, but would not do for English bacon, the proportion of fat being too great. Poultry are not so numerous as in England; it is only because the peasants sell the few eggs they get instead of eating them, as English cottagers who keep three or four hens do, and the co-operative system of collection in vogue that so many are sent out of the country. The rearing of calves is an item that we must try to imitate, as they greatly impressed us by their excellent condition wherever we went.

The whole of the Chemical, Entomological, and Physiological Stations, splendidly equipped and doing excellent work for agriculture, is under the Minister of Agriculture, and it is clear we want some such institutions in this country, rather than have to rely solely on individual voluntary work. We have learnt that the Hungarian Government fosters agriculture in a way not dreamed of in this country, and it should be impressed on all our rural

Figs 94 and 95. The State-owned pleasure and bathing resort of Tátra-Lomnicz, shewing the Presbyterian church.

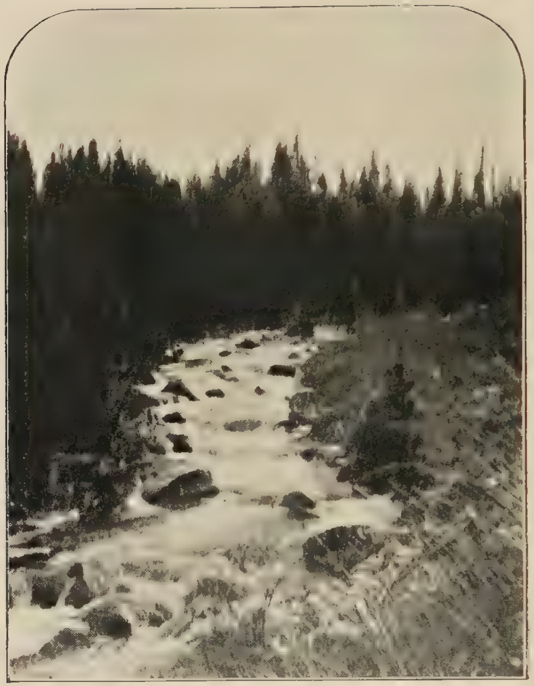

Fig 96. Mountain stream in the Tátra

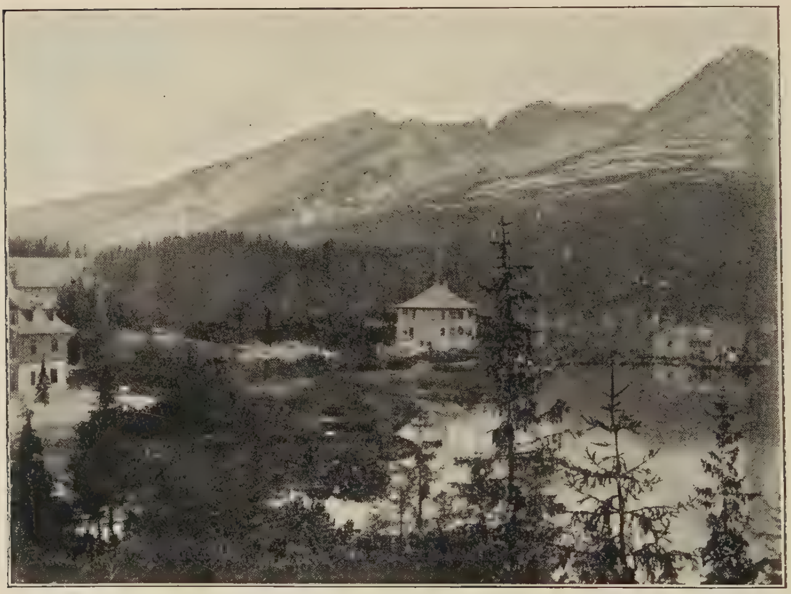

Fig 97. The lake of Csorba, with hotel and villas, preserved by the State as a national pleasure resort.

members of Parliament that co-operation in agriculture pays, and that better agricultural education in this country is essential, unless we wish the industry to fall behind the now awakening countries in the East and the great republics in the West. From an educational standpoint, such an enlarging experience, as our journey has proved, must serve to brighten the thoughts of all who were fortunate enough to be of the party, to the end of their lives.—C. N. Brooks.

What struck a stranger most forcibly was the enormous quantity of forage stuff grown for the cattle in the houses—tares, barley, peas, sainfoin, etc.—half the farms visited being perhaps halt occupied with crops like these. In the useful educational and research institutions the State gives England an obvious lead, and throughout the tour this impression was forced upon the party again and again. It is a subject for regret that we can find nothing in England like the agricultural academy at Magyar-Óvár.

The generous hospitality we met with was unbounded, and the kindly feeling and cordial welcome shown to us, as the representatives of England, both publicly and privately by all classes were most marked. The kindred representative government, the struggles for freedom in the past, and gratitude to us for sheltering their great patriot in 1849 were continually referred to. Some things, chiefly connected with bad roads, want of sanitation, the employment of women in large gangs in the fields, seemed to us reminiscent of feudal times; but with a fertile soil, cheap labour from surrounding poorer districts, a small national debt, a Government apparently to the fore in fostering all educational efforts, and with a people full of energy, the possibilities of this little independent kingdom cannot well be estimated.—Joseph Smith, jun.

The native Mongolian pig is a very good sort, with good back, loins and hams, and very hardy, but with one fatal objection for English bacon curers—the enormous thickness of fat. They have coarse curly hair. I had noticed in England the peculiar "horse hair" that furniture is stuffed with, but until I saw these pigs had no idea where it came from.

The wheat producing plains of Hungary are somewhat like our fen land with a trifle more sand in it, but not capable of growing the enormous crops, for a crop of over four quarters would layer, the straw being faint. A great portion of the land being under cultivation, the stock are fed by growing forage crops, barley and peas mixed together being a favourite early food for cutting green, then lucerne, cocksfoot grass, and clovers. This proves that stock can be kept without permanent pasture, and, as we are told, at a profit. Labour being so plentiful, there is no need to employ machinery, for the women do by hand most of the work much cheaper than could be done in any other way.—F. Clarke.

Memorandum on Trade with Hungary.—The British and Hungarian peoples, as well as their respective Governments, preserve the most friendly relations both political and commercial, and they mutually appreciate each others best qualities.

Both nations are naturally desirous to extend and develop their commerce, and Hungary produces many agricultural products, chiefly grain, cattle, and especially high-class horses, which would always find ready markets in Great

Britain. Unfortunately, Hungary is heavily handicapped by her geographical position, and, being also an inland country, she is almost cut off from the sea.

Communication, therefore, with other countries, beyond those immediately surrounding her (where she must always find her principal markets), becomes an expensive matter. For her produce to reach our shores, it must be sent by rail a distance varying from 1,500 to 2,000 miles across two or more foreign countries with different railway systems and varying tariffs, and when these difficulties and expenses are surmounted there is still the passage across the North Sea to be faced and paid for. It is obvious that whether it is corn that has to be sold cheaply, or even valuable horses to command good prices, both are heavily handicapped, for while the cost of carrying the corn may be closely calculated and possibly arranged for delivery in the United Kingdom on an inclusive charge under through bill of lading, it is doubtful if the transit charges could be brought low enough to permit of the export of such bulky and cheap produce to Great Britain, while in the case of valuable horses their transit expenses over such distances must be very formidable from the great space they require and the special precautions necessary to protect them from injury.

Nor is it much better if it be sought to convey the traffic between Hungary and Great Britain by sea from the only seaport that the former country possesses.

This is Fiume situated at the extreme south-western corner of the kingdom, and to reach which railway transit of varying, but for the most part long, distances, would first have to be traversed, and this port itself being at the North-eastern corner of the Adriatic, the freights to the United Kingdom, could not be much less than those for Russian grain from Odessa and the Black Sea, or from the Roumanian ports on the lower Danube.

In another important article of Hungarian production viz.: wines, the British market would probably not prove a remunerative one, for though we have tried many of them and found them to be pleasant and wholesome and adapted for summer consumption in Great Britain, they would have to face the formidable competition of the better known and more accessible cheap wines of similar classes from France, Germany and Italy.—W. MACANDREW.

Some of the results and conclusions I arrived at are as follows:—

1. There should be established in every County in England an Agricultural Science School, giving a thoroughly practical course of instruction, well backed up with the best scientific instruction. In some districts an agricultural course of instruction might become the equivalent of a Modern Side to Country Grammar Schools. In such schools seed-testing and analysis might very well be introduced as part of the instruction to boys, and as benefitting parents who are farmers.

The garden work associated with such schools might lead to the distribution of new seeds, new plants and new varieties of plants, that would be of commercial value to the district. At suitable centres throughout the country, say, the collegiate centres of the Board of Agriculture, or other strong county centres of agricultural education, means should be taken for improving the stock of the district in such ways as may be deemed most necessary or desirable by the maintenance of first class boars, bulls, and stallions.

2. The County Analyst in every county should analyse feeding stuffs, manures, soils, etc., at a uniform nominal fee, he being substantially paid by the county authority. The present system of variable scales is wrong, as the average farmer will not keep by him for ready reference anybody's scale, whilst he would often have an analysis made of manures or foods which he was using, if he knew that the cost would be a uniform one of 2s. 6d or 5s., or some other nominal sum.

3. Chambers of Agriculture in this country should combine with the Agricultural Societies. It is a waste of strength for the two to exist side by side, the first generally promoting meetings and attending to parliamentary business, and the second existing solely for the purpose of promoting an annual show. The combined organisations would be strong enough to pay a manager, who would do all present work, and could also turn his attention to the development of co-operation among farmers in the collection of eggs, butter, birds, and soft cheeses. He could also arrange for the examination of the same, as at Budapest, and of their ultimate disposal to the best markets.

4. I am inclined to agree with the Hungarian idea of a dairy school as a first class working dairy, with up-to-date appliances covering all the ground of dairy work and the training of a limited number of pupils for a whole year. The travelling dairy class has served its purpose in England, and the time has come when a more thorough instruction or training should be given to those persons who are likely to become dairy managers or dairy teachers.

5. The Hungarian idea of conducting a Model Farm also commends itself to me as being far preferable to the policy of many County Councils in England in acquiring a farm and then trying to conduct it on commercial and educational lines at the same time. It seems to me that land which is to be used for agricultural education purposes must be dealt with on totally different lines to a model farm. I doubt whether educational demonstrations in Agriculture can collectively be made a commercial success, and yet the function they play is a most valuable one. I think that the two systems in one establishment militate against, if they do not mutually destroy, each other.

6. The system of school farms, which is growing in this country, seems to me somewhat unsound. It would be far preferable to give boys of school age, say, up to 16 or 17 years, a good scientific education in those subjects which are preparatory for or lead up to agriculture. School gardens are excellent and should be made as universal as possible in rural districts.

7. I was thoroughly convinced of the excellence of their methods in combining practical and scientific work in gardening and farming, and as far as possible we should do well to follow their example. Our usual methods are too bookish, too theoretical, not sufficiently direct. We must make our education appeal to the people, and convince adults of its value. For this purpose centres of agricultural education must try to improve stock in their neighbourhood, undertake analyses, make original investigations; in other words, the staff must to a reasonable extent work directly for the public, as well as teach boys.

I shall see what can be done in Cambridgeshire by (*a*) my own Committee, (*b*) the Chamber of Agriculture, and (*c*) the University Agricultural Department to apply some of the Hungarian methods.—Austin Keen.

The large cattle, I have no doubt, are very good for draught purposes, but it should pay the Hungarians well to keep two classes, one for meat and the other for draught. Many of our smaller cattle kept as those were would be ready for the butcher in half the time, and would make quite two-thirds of the money and turn it over very much more quickly. We pay a good deal of attention to stock on our farms and we have come to the conclusion that small cattle quickly fatted make the best meat, and in the long run make the most money. With regard to pigs, I am sure they could do well with any of our breeds of pigs if introduced over the country. The poultry I thought very poor and do not come up to ours at all, not that ours are perfect.

The introduction of a few horse stud farms by the State, run on Hungarian principles, would be of great benefit to us. This applies to bulls also. What we want, and find so hard to get, is good stallions and bulls at reasonable prices. The same system of centres for each district could be easily applied or the State could supply them on easy terms to one or two big farmers in each district on condition that they should let the farmers and breeders in the district have the use of them at fees fixed by the State.

The great secret of their success seems to be co-operation and cheap labour and the fact that they have almost a monopoly of their own market, which prevents prices from fluctuating to the same extent that they do here. Again in many parts the soil does not require the same amount of artificial nourishment that ours does, a great saving in cost of production. But I am afraid the chief difference of all is in the natures of the two peoples, for it will take years for our smaller tenant farmers to co-operate. Although they may see the advantage of co-operation many of them are under the impression that they lose their liberty of action and have to do only as they are told. The Hungarians on the other hand are accustomed to have everything initiated for them.—E. H. Brewster.

I think that agriculturists might introduce more machinery with advantage and thus save the peasants, more especially the females, from some of the very hard work they have to perform.—Robert C. Hunter.

What impressed me most in Hungary was the assistance given by the State in propagating good, sound, male stock, and also seed corn, from given centres throughout the country. Also the quantity of forage crops grown for feeding green, thereby showing that in a dry climate it is a more certain means of providing feed than dependence on ordinary grazing lands. I think it would benefit agriculture in this country if County Councils had the power of purchasing or hiring good, sound, male stock and placing them at stud at a nominal fee at given centres, the State giving them a grant for this purpose according to the size and standing of the county.—D. Crawford, jun.

The impression left on the minds of many of us was that the State ran everything, and that there was no room for private enterprise. Though this I now believe is not entirely correct, the State certainly seems to take much greater interest in agriculture than our own government does; in some ways it probably does good, but I am not sure that the final result is good. The State wished to improve the breed of horses and so supplies fine stallions at absurdly low prices, but this quite prevents anyone breeding or keeping a fine stallion himself. In the same way it is quite impossible for any private individual to compete with the State in any department which it may choose to take up, and the risk of having to compete would make any man hesitate before investing capital in any enterprise.

I am also not at all sure that the co-operative societies are always good. The idea in many cases is to do away with the middle man, but this I think is a fallacy. It takes a very shrewd man to be a successful middleman, and, though the profits are sometimes large, yet I think it will be found that the average profits of the middle man are no more than the average expenses of a co-operative society. At first the societies are generally very successful, as the first managers are carefully chosen, but in time the society comes to be run by a single man, and then the success or failure of the concern entirely depends on him. In dealing with middlemen, too, it is possible, if he does not give a good price, to go to another, but if you belong to a society you cannot well dispose of your produce in any way except through the society.

In many parts of the country I thought a few pounds spent in draining would greatly improve the land, and that on the large and level fields the use of more machinery would be advantageous. I thought that the State might turn its attention to the improvement of the roads with great advantage. In the grain elevator and the flour mills I was surprised to find there was no machine which I could not find at home either in our little mill at Bures or my firm's maltings at Colchester.

The peasant proprietors seem to be a respectable and self reliant set of men, far superior to our average villagers in England. The evident pride with which the peasants showed us their live stock at the village show at Német-pereg was splendid; I wish we could manage similar shows in England.

The agricultural schools should do a great deal of good, though I am doubtful whether it is true economy to provide education at a nominal sum to those who can afford to pay for it.

I may sum up by saying that I consider that in horse, and perhaps in cattle breeding, Hungary is in advance of England, but that in the cultivation of the soil they are many years behind us. If peace could be ensured (and if the various nations of the Austro-Hungarian monarchy could unite they would be one of the strongest states of Europe) I consider there would be a grand opportunity for the investment of capital in farming in Hungary, but that under the present political conditions I should be afraid to lay out my money in that country.—JOHN GARRAD.

Among the few things I thought would help us was the management of the cows, growing fodder and carting it to them so that the animals were kept in one temperature, a great thing for milch cows. The dairies for small farmers to send their milk to, I thought a great benefit to them, but it would work out very expensive with us. We can make twopence per quart of new milk, it takes ten quarts to make one lb. of butter, so that the butter would cost 1s. 8d. per lb., only leaving the skim milk to pay the working of the dairy.—HENRY W. HOSKIN.

The thing that interested me most on our trip was the way in which the State helped and encouraged their country to breed sound horses I think that if anything could be done to press our Government to take up the matter and follow in some way what the Hungarian Government do in providing *sound* and *suitable* sires for getting remounts, they might be bred in England by the farmers as well as in any other country.—R. T. Cross.

I was much impressed by the interest which the State takes in agriculture to make it a success; by the horse-breeding on the State farms which is carried out on the best possible lines; by the careful selection of sound stallions which are distributed about the country for the use of the small farmers at a very small fee; by the breeding of pedigree bulls which are sold to the village communities; by the growing of the best kinds of grain to suit the locality, which is sold to the farmers for seed at a reasonable price; by the analysis and trials of soil, free of cost to the farmers; by the co-operation of farmers in dairying, in selling their produce in market and of buying pedigree bulls to improve their stock; and by the management of dairy cows and rearing of calves which was especially worth noticing. These are points which might with advantage be copied in this country.—J. F. W. Dobson.

Since we returned, I have spoken to some of our light horse or nag dealers, and learned to my surprise that several of the large dealers from London and Yorkshire go regularly over to Hungary to purchase some of their carriage and hack horses, and give prices from £200 to £300 per pair, but they all say the difficulty is to find a sufficient quantity with bone and size. They are of the same opinion as myself, that if the Hungarians would get some Cleveland bays or the Yorkshire coach mares and cross them with their blood horses, they would be able to get a type of horse which would be far more valuable than their horses. In England in the old coaching days, the light trotting cart mares were crossed with the thoroughbreds, thus getting the action and trotting, as the blood horse has the gallop. We all know the value put on hackneys that can step and go. The hackney breed has made great progress the last 25 years, they rank as one of the most valuable ride and drive horses of the day. It is no uncommon occurrence at our sales at Wrexham and Crewe, where I am called to several times during the year to judge, for a pair of Hackneys to make from 500 to 1,000 guineas. Such facts further prove to my mind, that Hungary might, with advantage, try crossing with some of the breeds named, and improve their horse stock to make a more valuable horse for the English market, as they have got the blood and beautiful symmetry, but lack the bone and action which is such a valuable article in the English market. I may say that I have shipped to the Argentine Republic, South America, for over a dozen years, all sorts of stock, and I think what applies to them, applies with equal force to Hungary. South America found their stock had got small and weedy, so they set about remedying that evil, some 12 or 14 years ago, by importing Clydesdale and Cleveland bays and Yorkshire coach stallions and percherons, and I have sent a few clean or light legged shire stallions to put to their heaviest mares.

The next thing I wish to speak about is their pigs. I may say, I have been a large breeder of pigs for nearly 20 years, and I find that pig breeding is one of the most profitable things connected with my farm. I keep from 15 to 20 breeding sows and two boars, one boar is of the black Berkshire large breed, and the other is white Yorkshire large breed, as I find the cross is much better, the Berkshire gets fat on less food than the Yorkshire but do not get the size or weight fast enough, which is very essential in these times. It is best to breed what will grow fastest and make the most weight in the shortest time. Therefore I would suggest to the Hungarians to change their breed of pigs, as the curly breed I saw costs too much to get them into condition for killing. The great advantage of the cross I advocate is, that they are nearly always ready as porkers at five scores, three months old, and bacon pigs at from nine to thirty scores, eight to twelve months old.

I noticed that their geese and turkeys were very small. Now I think when you grow anything for the market, go in for weight, which always commands the most money. I would suggest that they get some of the white Embden breed of geese, their great quality being very rapid growth when young, thus producing early goslings for table and market ; they are also excellent layers and hardy and good foragers. I keep both and sell at 10d. per lb., weighing 16 to 18 lbs each. Also the grey Toulouse is one of the best to be chosen, as they develop to an enormous size, are very hardy and good layers, and for the table are decidedly the best of all the varieties of geese, but not for early killing, for they require to be kept until close on Christmas, at which time large fat geese command the best price on the market. They have in Hungary the best food for getting geese, pigs, &c., ready for market, that is plenty of rye and barley meal and other offals in seconds corn, wheat, maize, &c. I should also recommend them to go in for black Norfolk turkeys, as they always command the best prices on the London markets, their flesh being the finest and best before all other breeds, although they do not grow to such a size as the American bronze. I think the Hungarians are behind us in regard to keeping poultry, &c., as I saw very few poultry or pigs on the large farms, or about the cottages of the peasantry, and I think that the peasantry of such a large agricultural country as Hungary should be encouraged to go in for more of this sort of thing.—JOHN COWX.

No words of ours can adequately thank the Hungarian Agricultural Department and those noblemen, gentlemen, and ladies too, who everywhere, from first to last, held out to us the open hand of welcome and friendship. One impression that stands out from the rest is the model peasant farm in Magyar Pécska ; four of our county councillors saw this, and when the question is asked why does our best bone and muscle leave the country to raise an inferior stock in our large towns ? let us think of the model peasant farm in far off Hungary.—JOHN G. EVE.

It is the same in Hungary as in most countries :—their manner of work and their cattle, pigs, etc., suit their climate, soil and purpose, but they would not be any good for this country —G. BAYNES, JUN.

The general "apple pie" order of everything, everywhere, the great care, and almost love, for all kinds of stock, and *their absolute belief and faith in agriculture*, seemed to show itself at all times and in all the places we visited. The growing of successive green crops for stall feeding, and also their method of "stalling" their cattle might be with advantage imitated by us, as could their way of rearing all calves by hand giving each calf one seventh of its weight of sterilized milk per day with a feeding can or bottle, each cow's slate relating its age, time of calving, milking powers, and other matters, that an owner should (but seldom does) know.

The visit to the Arab stud farm at Bábolna gave us an insight into the methods of improving the Hungarian horses (improving them until they were Hungarian no longer). I wish the "powers that be" at our Board of Agriculture, as well as our County Councillors could have seen the sires that these establishments were sending out into the districts (in some instances at a 5s. fee per mare) and generally at shillings where we should have to pay pounds and that for the use of an animal who has a district two or three times the size he could properly cover.

The central Co-operative Creamery at Budapest was evidently a well managed and paying concern and one hoped that a fair share of the profits went to the farmer, for it is evident that the middleman here as everywhere had the principal plums of the agricultural pudding. I firmly believe that could farmers pocket one half of the profit that is now made between them and the consumer they would be in quite a different position to what they are at present, but the middleman or merchant looms large on everything, even on an agricultural party.

Another thing that struck me was that all the land was put to some, and apparently the best, use; if it was too hot or too poor to grow wheat then rye was there, and if it was too poor for everything else there was a crop of fir trees in all stages of growth. The journey to the model peasant farm gave us one of the few opportunities we had of seeing the peasant proprietor who is quite an important quantity in the country. Their fields were mostly corn, and it must be wonderful land to stand continuous cropping, yet it all looked clean and a colour that here could only be obtained by expensive nitrogenous manuring.

The winter farming school at Magyar Pécska was a school or society that I firmly believe if started in our villages would greatly benefit the young men, it could be easily tacked on to the night schools and, if the subjects taught at Pécska ousted "commercial arithmetic" and other like subjects, the lads would be just as well and have learned something by which they could improve their positions in life and perhaps start winter industries.—B. C. Custerson.

The State Poultry Farm at Gödöllö, which covers 16 acres of land, is not, in my opinion, up to the high standard of the other State farms of the various branches of agriculture. I think perhaps the reason is that poultry farming is still in its infancy, this State farm having been started only two years or so. I do not consider that they have got the right sort of chickens. The native varieties, *i.e.*, white and yellow Hungarians, are undersized and in consequence their eggs are small. The foreign varieties I saw, such as the Langshans, Plymouth Rocks, and Dorkings, are not at all good specimens of their kind.

The soil is most suitable for poultry rearing, and undoubtedly there ought to be a great future for it. The peasants want teaching how to rear chickens and also what are the best sorts to keep; at present comparatively few appear to be kept by the peasant farmers, and what I saw were very undersized poor specimens. The same remark applies to the geese; I saw many flocks of Embdem Geese, but they were all small poor specimens. It may be of interest to mention that Mr E. H. Brewster and myself are sending out four hens and one cock of the following varieties to the State farm:—Buff and Black Orpingtons and White Dorkings.

The co-operative system for eggs has been started, and so the peasant farmer would have a certain market for his eggs. The State farm is well managed and will, no doubt, be of great benefit to the Hungarian poultry rearers in the future.—F. A. VAIZEY.

We had many opportunities for observing the enormous amount of good work carried on by the Hungarian Government for the benefit of their agriculture, and the beneficial results were apparent on all sides. Their horse and cattle breeding, their experimental farms, their agricultural colleges and schools, &c., &c., are all praiseworthy institutions, and are undoubtedly of very great benefit to their agriculturists. One cannot help thinking that if the British Government had adopted similar methods and institutions at the time the Hungarians did we should probably have heard less of British agricultural depression.

In Hungary I think an enormous amount of labour might be saved by labour-saving machinery. At all events they ought undoubtedly to have a better plough in the most rural parts because those in use fail to bury the weeds when ploughing. Consequently the land is in a dirty state when seeded, which entails much labour to keep it clean afterwards.

Personally, I think a system of hiring land is far preferable to peasant proprietorship, especially where a tenant has reasonable security. Because capital is the most necessary implement wherewith to cultivate land, and every farmer ought to have surplus and available capital in order to enable him to buy and sell when most favourable to himself. Ownership of one's own farm frequently robs one of the necessary available capital, which necessitates borrowing and when unfortunate enough to appeal to the money-lenders for assistance it practically means ruin, which is, I believe, the experience of many Hungarian farmers. However, I hope their proposed credit bank system will mitigate, if not wholly cure, the present unfortunate state of things.

I believe their wheat yields badly, and it is just possible that some of our prolific kinds of wheat, if grown there, might do much better for them than their own does. We always change all our seeds every year, and if they are not in the habit of doing so, I think it advisable they should.—JOHN PIMBLEY.

The educational system in Hungary appears to be a well thought out and co-ordinated scheme whereby everyone in the country is enabled to secure such an education as will best fit him for his prospective occupation, trade or profession. The guiding principle in teaching seems to find expression in the words of one of her own Ministers of Education—"*What* we teach the children is not half so important as *how* we teach."

So far as one can judge from limited experience the primary aim of the educator appears to be to make good citizens of the children and to this end parent and teacher are both invoked to inculcate right moral principles in the child and to teach it to clearly and intelligently know what its country is and has been. The spirit of true patriotism appears indeed to prevade the whole series of educational institutions in Hungary from its primary schools to the very highest seats of learning. It is promoted and encouraged in every way—by the study of the natural features and products of the country, by making the teaching of Hungarian history and literature compulsory in all grades, by singing, which is a daily exercise in all schools, even in those that are purely technical, and by frequent reference to agricultural life as it at present exists in the vine-growing country or in the wide plains beloved by all Hungarians.

It is interesting to learn that the great importance of education in national life is fully realised by parents and that even in the poorest schools children are very rarely absent from their classes. Furthermore, although there is a multiplicity of creeds and races, there is, we are told, no religious difficulty such as we know, unfortunately, exists in some other countries.

With true educational instinct the Hungarian Ministry, insisting upon a high qualification from their teachers, take care to provide them with excellent pedagogic training. For the elementary teachers there are the well-equipped normal training schools—one of which is established in each of the scholastic divisions of the country—and for the secondary teachers is the large training college at Budapest.

Teachers for secondary schools get a very thorough training in methods of teaching while in addition to the ordinary qualifications they must show that they possess a special knowledge of at least two subjects. As an example of the broad view taken by the Hungarian Ministry of what is meant by "training" a teacher, mention may be made of the fact that, as candidates for a teaching certificate are required to have such special knowledge as above referred to, teachers in training may be sent abroad to study special methods or it may be the teaching of special subjects, or else batches of teachers will be sent in travel under the guidance and instruction of a professor to study art or industries in foreign countries. It is a notable fact that in Hungary where the agricultural woman seems to be the poorest paid worker in the State, the woman teacher gets the same salary as the male teacher in the same grade.

The scheme of national education seems to be :—

1. Elementary or Primary Schools. Every child in the country is required to attend one of these schools up till the 12th year (unless privately instructed, in which case, however, it does not escape the periodical examinations of the schools). Public school examinations are, as a rule, oral as it is held that written examinations encourage "cramming."

2. Revision Schools and Secondary Schools. From the 12th to the 15th year of a child's life it must attend one of these two kinds of school. If the circumstances of the parents are such that they require some labour from the child then the revision school is selected, as attendance is only compulsory for a certain number of hours weekly, whereas entrance to a secondary school means daily attendance as in the primary grade. In towns above a certain population the secondary school takes on a special character and is called a "Citizen" school. These secondary schools may be entirely or only partially under the control of the State.

The secondary schools are of two kinds—

(*a*) The Classical High School whose function appears to be to prepare its pupils for professional or literary life.

(*b*) The Modern High School that trains for commercial, industrial or agricultural life.

So far as agricultural educational training is concerned the Hungarian system seems to be set on good lines and capable of development. Every special need is apparently met by the establishment of special centres of instruction :—

1. For intelligent village lads likely to become foreman labourers and for sons of the very small farmers there are over a score of rural agricultural schools each with farms attached at which such instruction is given as is judged will best serve their future requirements. These lads would in all likelihood have only passed through the revision schools. The course lasts for two years. Particular attention is given to the operations of agriculture and to rough carpentry, basket work, etc.

2. Farmers' Institutes for the sons of the ordinary farmer and for young men intending to become land stewards on the big estates. The students as a rule appear to enter straight from one of the secondary schools at the age of 16 or thereabouts. This being so the first year (there are three years' training in all) is mainly devoted to work on the attached farm and practically all theoretical teaching postponed until the second and third year. The institutes are well equipped, although on the natural science side there appears to be more museum work and less laboratory practice than one would care to follow in such essentially practical schools.

3. A Royal College in which the highest type of scientific and practical instruction is given to young men intending to become agricultural teachers as well as to the highest intellectual type of farmer in the country. The course extends through two years and includes in its curriculum all those subjects likely to be useful to a farmer. In connection with this college there are (in addition to the farm) several experimental stations—for seed testing, for study of plant diseases, for plant breeding, a dairy experimental station, a botanic garden and a weather bureau.

4. Special Schools. In addition to the foregoing a large number of schools giving instruction in special industries connected with agriculture are scattered throughout the country. There is a high grade dairy school, and several others of a less pretentious character, intended for the training of ordinary dairy workers ; a veterinary college, a poultry school, a school for beekeepers, a high grade horticultural school, and several others of a more elementary type intended for ordinary working gardeners, a drainage school, a vine-culture school, a high grade college of forestry, and four schools for the instruction of working foresters.—DAVID HOUSTON.

The calves that were fed with sterilized milk seemed to be extraordinarily healthy. Great care was taken both with cows and calves, and I think it would be a good lesson to many farmers to see how well they are seen to.

The drinking troughs with lids, in the cow houses, were very good, in my opinion. Maize silage is obviously a good food ; astragalus was also seen on one occasion for making into ensilage, as the stock would not eat it green.

The pigs were of a better class than the sheep, but did not look as if they would reach maturity very early, certainly not as quickly as our English pigs, which fatten in about 16 weeks. The sight of good horses, 600 or so in droves, all over the country, with hardly a bad horse among them, was one not likely to be forgotten. The way the State helps the production of good horses all over the country needs to be imitated elsewhere.—H. D. SQUIER.

The most striking feature of Hungarian farming is the abundance of manual labour employed; the system of feeding large herds of cattle indoors with rye and tares carted every day and cut into chaff entails an enormous amount of labour, and the total absence of fences round any of the grazing meadows necessitates a considerable number of extra stockmen.

The milking herds were, without exception, in splendid "beefy" condition, but they were not heavy milkers. The size of the fatting bullocks at Kisbér was enormous. We calculated that they put on about 7s. 6d. per week while fatting in the shed on a daily diet of 9lbs. maize-meal, 4½lbs. dried grains, and 56lbs. sugar beet refuse, which should not be an expensive ration.—REGINALD MARRIAGE.

I was much struck with the gentleness and kindness shewn by the attendants to the horses, and thought that having a donkey and dogs in their sheds was a good way of teaching them good manners, which so much enhances their value. The care and cleanliness bestowed on all the cattle was much to be commended, also the great attention paid to general economy and judicious feeding. In some parts I thought the temperature of the cowsheds rather high, but still no unpleasantness from foul air.

The State Farms are of great advantage to the smaller occupiers in providing the best sires at nominal fees, also good seed corn, etc. I think their breeds of cattle well adapted to the country, and am not at all certain that they could be improved upon.—EDWARD TINGEY.

Horse-breeding in Hungary is most successful, and every detail carried out as it should be. During our visit not one unsound animal that was being bred from was seen, and we were shown thousands and thousands. Kindness to the horses was most marked.

Cattle-breeding did not strike me as a paying game, and what we saw of milk-producing seemed to be done in too expensive a way, but the calf-rearing was excellent.

Agriculture in Hungary is carried on successfully, and this is due in great measure to their *Government working for the people*, an example well worthy of notice of our Government. If our Government did as much for English farmers as the Hungarian does for theirs we should hear less of the troubles of English farming.—C. H. CHISNALL.

It appears to me that an abundance of cheap labour, a fertile soil, and a congenial climate combine to render farming a pleasant, and probably more or less profitable pursuit in Hungary, but, in a great many cases, it struck one that the subdivision of peasant occupations was carried too far for economical working or good farming.

In the collection and distribution of dairy produce, poultry and eggs, the agricultural co-operative societies are apparently doing good work, and one cannot but think their example might be followed with advantage in this country.

It is always a debatable question to what extent State aid paralyses individual effort, and the purchase and maintenance of stallions and bulls for stud purposes out of the rates would strike most Englishmen as a practice bordering on Communism.

When one approaches the subject of agricultural education and research one finds little ground for criticism. The colleges are well equipped, and we found the professors thoroughly practical and efficient men, conducting scientific experiments in a way that should prove of great practical utility. Agricultural research stations are scarcely needed in each county in this country, and would be a costly experiment; but could not the county councils of two or more essentially agricultural counties combine in the establishment and maintenance of one such institution? One has to bear in mind that manufacturing industries in Hungary are at present limited in number, and agriculture has few competitors in the labour market; at the same time rural education is of a kind that fits the labourer for an agricultural life, and one would like to see similar influences brought to bear on the elementary schools of our country districts.

Finally, we found amongst the larger farmers, the agents of the nobles whose estates we visited, and the directors of the State farms, an intimate and expert knowledge of both the practical and scientific aspects of their work that was beyond admiration, and we experienced at the hands of all of them an amount of kindness and courtesy that we shall never forget.—William Hasler.

In Britain *dairying* is principally confined to the districts of heaviest rainfall, which are those principally in pasture, and although land under cultivated crops is more or less used for the purpose, the practice might be much further extended. It seems to me the Essex farmers who follow dairying, might with advantage follow the custom so frequently seen in Hungary of growing more forage crops, and depend less on pasture. In a dry, hot season London often suffers from a milk famine, which the more extended growth of forage crops would do away with.

The number, size, age, efficiency, and grades of the *agricultural teaching establishments* of Hungary surprise me, and the effect is clearly seen on the cultivation of the land. The teaching of the agricultural colleges and schools encourages more enlightened and methodical working of the farm, and a spirit of enquiry at the colleges which is pleasant to see, and can only lead to progress. On the farm it is seen in the daily weighing of the milk of each cow, the weekly weighing of the fattening animals, &c. At the colleges we see it in the pot culture and experimental plots, of which the cement pots and troughs at Magyar-Óvar are the best I have seen. The same is indicated in the seed testing and entomological stations.

In Britain *agricultural societies* devote a great part of their energies to holding an annual show, when prizes are given for the best stock, but outside this, they do little for the general welfare of their members or of agriculture. In Hungary these conditions are reversed, and through agricultural lecturers, and by adopting the principles of co-operation, they seem to give sound advice and practical aid to their members. Owing to the enormous population of Britain engaged in industrial pursuits, co-operation for the collection and distribution of the products of the farm, is not of such vital importance here as in Hungary. Even here, however, over one half of Great Britain and Ireland its principles might be taken advantage of to a much greater extent than they are.

The *assistance given by the State* is probably the most noticeable feature of Hungarian agriculture. Instead of as here, allowing the success of every movement to depend on individual effort, the State aids and fosters everything from which the country is likely to benefit. Many here think that such aids have an extremely enervating effect on the people, and by doing away with individual effort will lead to degeneration. As yet no State has got that length, and in Hungary such aid as is given will encourage the recipients to greater efforts rather than the reverse, and plenty of opportunities will still remain for individual effort.—JOHN SPEIR.

For more than a century the successive Ministers of Agriculture have realized their duties and nobly striven to perform them for the greatest good of their country. Not one has been more vigilant and efficient than the present holder of the office, His Excellency Dr. Ignatius Darányi, to whose great courtesy and interest the undoubted success of the visit may be attributed. In his royal treatment of his British visitors, the chief thought was to further and strengthen the bonds of sympathy between the two countries, and it would have been of use had the British Board of Agriculture and the Royal Agricultural Society been represented.

The State farms of Hungary proved conclusively the benefit of large proprietorships. The large holding secured advantages over the small in every direction as far as the visitor could judge. The cultivation by peasant proprietors of small patches of ground not equalling half a rood in area cannot possibly be satisfactory from any point of view. Peasants working with insufficient capital and with little or no machinery cannot be expected to secure the best results. Yet no intelligent man could see the actual products of their labour without feeling impressed not only with its goodness but with the amount of guidance they must have had in their work.

Examination of the State farms, schools and other institutions for every item relating to a farmer's duties, speedily revealed the cause. It seems as if the whole aim of the State and every State official is to do all things in reason to improve any and every industry directly or indirectly connected with agriculture. The result is as astonishing as it is satisfactory. No State could possibly spend money more effectively than Hungary is doing in its agricultural stations. But in no single instance have the British farmers detected a solitary case of neglect, mismanagement, or lavish outlay. In every department subject to State control, is to be found, as a leading principle, *economy*, and alongside of it, with even more striking results, *efficiency*. The station for seed testing at Budapest made everyone feel the difference in the methods of work in Britain and proved the utility and advantages of a central station for such a purpose.

For generations every effort has been made through State studs to encourage and help breeders to improve their stock of horses. As a consequence the country is full of high-blooded stock of great beauty and usefulness. Looked at merely as a breeding business, the conclusion must be come to that the State has been wisely led to a proper and profitable policy. On these points England can profit much by Hungarian experience.

The chief and best crop grown is wheat. The position Hungary takes to-day in wheat production is more directly attributable to the professors who have studied intelligently the needs of the miller and what constituted the right composition of the flour than to any advantages of soil or climate. Essex should be the premier wheat county. It is to be hoped Essex men learnt their lesson.

The barleys exhibited at Szerencs had more than special value, as they showed the character of grain left in the country after it had been swept for its malting grades. After proper cleaning, many of these samples would make very fine quality malt, and as the weight per bushel is now quite immaterial, it may be hoped that proper steps will be taken to put such useful grain upon the English market. Very much improvement has been steadily taking place in the growth and cultivation of barley, and attention is now being directed to the wishes of the users, and the right sorting, cleaning, and grading of the grain. But whatever advice one may venture to suggest to the Hungarians, it is quite certain it is as much needed by their Essex visitors.

Of the crops not grown by English farmers, wine is the most important The ravages of the phylloxera almost shattered the industry a few years ago, and but for the prompt aid so readily furnished by the State (in viticultural research and teaching), the vineyards of Hungary would look very different to-day. Here again another valuable object lesson of the direct utility of technical colleges is furnished.

The sympathy between Hungary and England is deep rooted and universal and to put it to practical use, it would be of great advantage to both nations to foster commercial relations. Some of the products of Hungary are scarcely known in Britain, whilst others are largely used by us but are known by names other than Hungarian. All this ought to be amended and the first and most necessary step is that exporters should study English requirements. We could buy freely.—H. STOPES.

APPENDIX.

I.—AGRICULTURAL EDUCATION IN HUNGARY FROM TIMES PAST DOWN TO THE PRESENT.

By ALEXANDER VÖRÖS, *Royal Councillor, Director, and translated from the Hungarian by* VICTOR THALLMAYER, *Professor, in the Agricultural Academy, Magyar Óvár.*

Agricultural education is of very ancient date in Hungary where it always was considered to be of greatest importance. It is hardly too much to say that in this line of public instruction the Hungarians were at the head of other nations. In the eighteenth century Hungary could already boast of an agricultural school based on a much higher level than those which for the same purpose and at that time had been established in other countries. As a country of eminent agricultural interests, and agriculture being one of the principal occupations of her inhabitants, Hungary had been providing means for the diffusion of agricultural knowledge among her population at an early period.

Lectures on agriculture were first given at the University at Nagy-Szombat in 1630 and at the college of Sárospatak in 1650. A century later agriculture was taught at the noblemen's military colleges of Szempcz (1763), Vácz (1768) and Tata (1776).

In 1779 a patriotic clergyman named Samuel Tessedik established the first farm school at Szarvas in which the students were taught not only agriculture but trade.

A chair of agriculture together with experimental grounds were established at the Hungarian University of Sciences soon after its removal from Nagy-Szombat to Buda in 1777, lectures on agriculture being given at the university up to 1814. In 1787 the University of Buda was endowed with a chair for veterinary science.

The famous Georgicon academy of Keszthely, founded and liberally endowed by Count George Festetich, a nobleman of high conceptions, was opened in 1797. The Georgicon was for a period of fifty years (1797—1848) the model agricultural college of Hungary, possessing chairs for agriculture, for laws, for stud farming, for forestry and gamekeeping, for horticulture, for rural engineering, for peasant husbandry and a course for rural housekeeping for women. From 1797—1848 the college has turned out 1,444 men possessing in a high degree the qualities requisite for their post.

In 1800, for the farmers of the county of Torontál, a farm school was established and supported by Count Christopher Nákó at Nagy-Szent-Miklós.

In 1818 the Archduke Albert of Sachsen-Teschen converted his castle of Magyar-Óvár into an agricultural school, originally for the purpose of educating by means of it the staff of agricultural stewards, managers and superintendents needed for his large estates. Up to 1848 the school had merely a private character. During 1848—1850 on account of war the school was closed. Of this school more will be said in the following pages.

In 1839 Count Károlyi and Count Battyáni established a school at Rohoncz with the aim of educating their own stewards therein. The year 1840 saw the opening of an agricultural school at Nagy-Körös. In 1845 a school for teaching orphans farming and gardening was opened at Zelemér. In 1846 a farm school was established at Szőkehalom for the special requirements of that fertile part of the country which is called Alföld (low land). The outburst of war in 1848 brought all these institutions to a temporary close, the Georgicon as well as the school at Magyar-Óvár at the same time coming to a standstill.

From the above it will be seen that with the exception of the chairs for agriculture at the university, rural teaching in the period before 1848 was given only in private schools which were founded and endowed by noblemen and owners of large estates, who, for having acted in this manner, must be looked upon as pioneers of progress in agriculture and as benefactors to the commonwealth.

It is now some fifty years that, after a dull season which for some time followed the end of the war in 1849, a new period began with the re-opening of Archduke Albert's school of Magyar-Óvár in 1850 by the Austrian Government, under the control of which it remained up to 1869, in which year it was transferred to the Hungarian Government. During the time of Austrian Government the language in use was German, from 1869—1880 German and Hungarian, no language but the Hungarian being permitted since 1884.

From 1850 Magyar-Óvár for a time was the only school of agriculture in Hungary. This remained so up to 1865, when the agricultural college at Keszthely was re-opened, not in the shape of the old Georgicon, but as a *national school for agriculture and sylviculture* with the exclusive use of the Hungarian language; the attendance at this school was from the beginning quite numerous.

In 1858 a cyclopaedic chair of agriculture was established at the Royal Polytechnical Joseph-Institute of Buda which, after having been in activity for 30 years, by want of attendance succumbed in 1888.

Of the schools of lower grade that of Nagy-Szent-Miklós was re-opened in 1855, which, having undergone several re-organizations, is still in activity.

As soon as Hungary recovered her ancient constitution in 1867, the Government at Budapest busily set to work to remodel and establish agricultural schools in different parts of the country. Within the space of a couple of years the Ministry of agriculture founded the colleges of Debreczen (1868) and of Kolozs-Monostor (1869). In 1874 the college of agriculture for Upper-Hungary was opened at Kassa. The agricultural school of Magyar-Óvár was converted into an academy in 1874. The course of studies in the four colleges of Keszthely, Debreczen, Kolozs-Monostor and Kassa lasts three years, the first year being devoted to practical instruction and labour in the fields. The four colleges mentioned are in every respect well equipped, they are housed in fine and modern buildings and conducted in a most modern way, to each of them being adjoined an estate of middle size on which the different branches of agriculture can be seen in operation. With the exception of Keszthely, in connection with the colleges are boarding-houses for the benefit of the students. These colleges are open to all youths over 15 years who have passed six out of the eight classes of gymnasia or "*real*" school. The school of Debreczen has been removed from the bustle of the city, being now situated at a certain distance from the town in the centre of a large farm called "Pallag."

Besides the academy and the four colleges there is in Hungary a great number of agricultural schools of a lower grade which we may call *farming* or *tillage* schools. The object of these schools is to educate the sons of small farmers and peasants in a way which will enable them to make a living as managers of small farms, or as foremen and head-labourers on large estates. The course of these schools is of two years duration and of an entirely practical character.

The oldest of these schools was established in 1865 in connection with the agricultural college of Keszthely, it was followed by the school of Debreczen in 1867, which, however, has been transferred to Karczag in 1877. In 1870 Liptó-Ujvár was opened, but later transferred to Rimaszombat. More schools of this kind were established at Ada (1884), at Csákova (1886), at Szent-Imre (1886), at Nagy-Szent-Miklós (1880), which school was named "Christof Institute" after its founder, at Algyógy founded in 1892 by Count Kun-Kocsárd, at Pápa (1894), at Kecskemét (1895), at Lugos (1895), at Jászberany (1896), at Hódmezővásárhely (1896), at Komárom (1897), at Breznóbánya (1899), at Szilágysomlyó (1901), all of which are being maintained by the Government.

Besides these schools there are four more of the same description in the Transylvanian part of the kingdom which are supported from a fund belonging to the Saxons of German origin who were early colonists in that part of the country, their immigration being encouraged many hundred years ago by several kings of Hungary. Their schools are those of Bestercze established 1870, Földvár established 1871, Medgyes established 1871 and Nagy-Szeben established 1888.

Farming-schools, which are supported partly by the county or community and partly by State subsidy, exist at Békéscsaba founded in 1897, and at Szabadka founded in 1897. The Csákvár tillage school was founded in 1891 and is supported by Count Nicholas Eszterházy. Each of these schools lays stress upon specialities in conformity with the peculiar needs of the region of Hungary which it is intended to serve.

For the purpose of spreading agricultural knowledge among the rural population as widely as possible winter schools are maintained by the Government which were attended during the past year by more than 300,000 persons, all of them either cultivators, landed proprietors or teachers.

Agricultural education in Hungary now comprises:—

Higher teaching, which is giving by the agricultural academy (average yearly attendance 157 students).

Intermediate education, represented by the four colleges (average yearly attendance 502 students).

Purely practical teaching, represented by the 21 farm schools (attendance 550 pupils).

Itinerant teaching, represented by 7 departmental professors who travel from place to place, giving lectures on agricultural matters, and four travelling experts for the cultivation of hops, of hemp, for dairying and for promoting rural association.

Professors (twelve in number) for giving a course of instruction in the preparatory schools for those who are preparing to be teachers of rural schools.

The staff of agricultural education of the Ministry consists of 185 persons who are employed as directors, professors, junior professors, stewards, travelling professors, experts, assistants and stipendists.

At Budapest the State maintains a veterinary high school, at Selmeczbánya an academy for forestry, and four forestry schools of lower grade at Királyhalma, Liptóujvár, Vadászerdő and Görgény-Szent-Imre for the education of foresters.

Other institutions existing in Hungary in connection with agricultural education and supported by the Government are the following:—

The dairy school at Sárvár and four schools for dairy labourers at Munkács, Gödöllő, Kisbér and Nagy-Szécsény.

The horticultural school at Budapest and five schools for garden-labourers at Baja, Nagybocskó, Lőcse, Torda and Orosháza.

The school for meadow culture and drainage at Kassa.

The school for poultry farming at Gödöllő.

The high course for vine culture at Budapest and eight schools for vineyard labourers at Bihardiószeg, Tarczal, Nagyenyed, Ménes, Tapolcza, Eger, Kecskemét and Pozsony.

The expenditure for agricultural instruction, including the veterinary high school, and exclusive of the forestry schools, vine culture schools, gardening schools and the school for meadow culture and drainage, for the year 1903, will amount to £99,259.

As it may be judged from the above, Hungary seems well provided with schools for teaching the different branches of agriculture. The schools are well organized, their sites having been chosen in conformity with the requirements of the agriculturist in the different parts of the country, the further development of these schools being at the same time an object of constant care of the Ministry of Agriculture.

II.—AGRICULTURAL ACADEMY OF MAGYAR-ÓVÁR.

By the same Author and Translator.

LOCATION—SURROUNDING COUNTRY—STUDIES—SPECIAL INSTITUTIONS.

The agricultural academy is located at Magyar-Óvár, which is the principal town of the county of Moson and the centre of a forty-thousand-acre estate belonging to the Archduke Frederick. The county of Moson is one of the smallest, it spreads over an area of 788 square miles. With the exception of the foot-hills of a range of mountains called "Lajtahegység," which for some distance are protruding into the county, the land is of a flat character. The soil is of alluvial formation. Owing to its fitness for field crops agriculture is the principal occupation of the inhabitants. Agricultural produce will always meet with a ready sale at Vienna, the capital of our Austrian neighbours. The population is 89,217, seventy per cent of which are of rural occupation. The productive area is 430,000 acres. Its distribution may be classified thus:—35·8 per cent. are large estates held by a few large proprietors, 0·9 per cent, are estates of a middle size (700—1,400 acres) 3·6 per cent. are small estates (250—700 acres), 59·7 per cent. being small farms belonging to the peasantry. Staple products in the line of field crops are wheat, rye and barley; in the line of animal production milk and butter, which latter two are exported in large quantities into Austria. There is in the county a local rural society with a membership of 376; a co-operative society for the breeding and rearing of cattle consisting of 792 members; 19 co-operative dairy associations of which 17 are in operation with a daily output of 1,000—1,500 lbs. of butter, most of which is sent to Vienna where it sells at a good price, the local price in the county being 1s. per pound. A co-operative society for egg-collection and export is about to be established. There are two associations for mutual aid.

Industry is represented by a number of establishments, the largest of which is devoted entirely to the manufacture of agricultural machinery. There are establishments for the fabrication of an explosive called meganite and cartridge shells, two distilleries, two flour mills and one brewery.

The town of Magyar-Óvár having now 3,816 inhabitants is of very ancient origin. During the stay and sway of the Romans in Pannonia, on the spot where the town now stands, there was maintained a military post which in the time of the migration of the nations was fortified, serving as a fortress. Later, after the land was taken by the Hungarians, the fortress was turned into a royal castle.

In 1818, Albert Kasimir, duke of Sachsen-Teschen, who was married to Maria Christina, daughter of Queen Maria Theresa, founded and endowed the agricultural school of Magyar-Óvár. From 1818 to 1849 it served principally for the purpose of educating stewards for the archducal estates. After the end of the war in 1849, the school was re-organised by the Austrian Government, under the control of which it remained up to 1869.

In 1874 the Hungarian Government converted the school into an academy. During the time of the Austrian regime the German language was used exclusively, from 1869 to 1884 both German and Hungarian, but since 1884 no other language but Hungarian has been permitted. From 1818 to 1900 the academy of Magyar-Óvár turned out 4,891 men well versed in scientific farming of which 1,328 were foreign alumni.

The academy of Magyar-Óvár now represents the highest grade of agricultural teaching in Hungary, its constitution in the main being the same as of the agricultural academies of other countries.

Since 1869 the academy has been under the control of the Ministry of Agriculture. Her aim is to train young men, who intend to farm their own properties or those of others in a most rational manner, and to produce agronomic scientists, men of study and research, professors of agriculture, and inspectors and officials for the public services connected with agriculture.

The academical year is divided into two terms or semesters, the winter term lasting from October to March, the summer term from March to August. At the end of each semester, in February and July, the students are subjected to verbal examination and are marked in each study. Passing the examinations and properly completing the course each of the students receives a certificate from the academy giving in detail his standing in each study and his average standing, together with remarks on his industry and behaviour during his time of study. The students are not admitted as a rule before the age of 18.

Students are only allowed to matriculate on producing certificates proving that they have passed the final examination (*testimonium maturitatis*) of a gymnasium or *real* school and that they have had at least one year's practise or training in farmwork on a well managed estate or farm. The matriculation fee for regular students is £7 a year. The academy is also open to "free auditors," by which is generally meant men who are of age and who wish to make a stay of some time there to perfect themselves in some branches of study, the fee for each study chosen being seven shillings.

The studies taught in the junior year are:—Inorganic and agricultural chemistry, mineralogy and soils, anatomy and physiology of farm animals, zoology, breeding of farm animals, cattle raising and dairying, anatomy and physiology of plants, applied botany, diseases of plants, climatology, mechanics, farm implements and machinery, plant culture and farming in general. Senior year:—Field crops and fodder plants, meadow culture, pomology, horticulture, horse, swine and sheep breeding, veterinary science, rural technology comprising brewing, distilling and sugar making, rural economy and statistics, rural laws, farm management, farm accounts, bookkeeping, surveying, rural building construction, bee, fish and silkworm culture.

In the ordinary classes the number of weekly hours is 26 to 29 during the winter term, and 22 to 27 during the summer term, besides this a certain number of hours a week is devoted to work and practical training in the laboratories, for teaching at sight by "rounds" in the fields, garden, vineyard, arboretum and the stables.

Each chair of study in conformity with its peculiar requirements is supplied with either a laboratory or a museum of collections and models and with the agricultural periodicals necessary.

The academy has a considerable library. It contains over 11,000 volumes and is particularly strong in rural literature embracing every branch of modern agriculture.

From time to time excursions are made to outlying districts in connection with the study of agriculture and its various manifestations. Each summer an excursion, the plan of which is carefully laid a long time in advance, is made to estates at some, often considerable, distances from the site of the academy.

There is a three weeks' vacation at Christmas and a two weeks' vacation at Easter besides the regular long vacation which lasts during the months of August and September.

A separate course for engineers is annually held.

There are eight scholarships of £15 each attached to the academy provided by the Government, and six by private benefactors of £10—£60 which must be competed for annually.

The students, being external, engage rooms, paying monthly. For £5 to £8 a month board and lodging are obtainable good enough to satisfy the demands of even fastidious young men.

The teaching staff of the academy comprises the director, nine professors, two lecturers, six assistants and one assistant farm manager. Five stipendists are employed as junior assistants, which do not ordinarily take part in the educational work in the academy, but are free to devote themselves to special study.

In connection with the academy there is an association of well-to-do students called "segély-egylet" (association for pecuniary aid) paying part of cost of board and lodging for students with inadequate means.

In 1902 the number of regular students in the junior year was 65, in the senior year 87, the number of free auditors being five, making a total of 157. To the greater part (55—60 per cent.) the students after finishing return home to farm on their parents estates or on rented land as the case may be, some 25 to 30 per cent. take situations as assistant farm managers, and the rest, 10 to 15 per cent., prepare for professors and for other branches of agricultural occupation.

The general budget of the agricultural academy is the following :—

Expenditure :	
Salaries of the staff	£4,918
Amount necessary for scientific apparatus, farm and garden...	£4,790
Total ...	£9,708
Income :	
Amount received from sale of farm and garden produce ...	£2,020
Amount received from matriculation and tuition fees ...	£690
Amount received from productive funds	£162
Total ...	£2,872
Deficit covered by the Government	£6,836

INSTITUTIONS MORE OR LESS CLOSELY CONNECTED WITH THE ACADEMY.

Experiment station for agricultural machines. The object of this station, which in 1869 was established in connection with the chair for agricultural machinery, is to test newly invented agricultural machines and implements, or those already in use, from both the practical and theoretical points of view, in order to determine their fitness for the work for which they are designed. It is further the business of the station, which is still an integral part of the chair for agricultural machinery, to supply to the farmers as complete and detailed information as possible on all questions relating to agricultural machines. On an average the number of machines and implements annually sent to the station for trial amounts to eight. The station has no staff of its own, the professor of farm machinery being as a rule entrusted with its management. Yearly expenditure :—£50 to £90.

Agricultural-chemical control and experiment station. The chief occupation of this station, which began its activity in 1873, is the examination and control of commercial fertilizers, feeding stuffs and other products, of which the purchaser needs to know the character and value. Charges for analytical work are rated on the base of a regular scale of fees, the cost of the examinations being paid by the person sending the materials to the station, whether he be farmer or dealer. For some years already the station has carried on investigations with the object of ascertaining the gluten content of different varieties of wheat and the influence of the same on the baking quality of the flour.

The following table shows the number and kind of materials analysed :—

	Samples in 1900.	Samples in 1901.
Commercial fertilizers	579	657
Wheat and flour...	183	436
Feeding stuffs	63	67
Soils	32	30
Other materials	191	152
Total...	1,048	1,342

A number of buildings intended for the housing of this station is now in course of erection. The staff of the station consists of a manager and of three assistant chemists. The management is entrusted to one of the professors of chemistry. The budget of the stations amounts to £1,000 a year.

Station for seed control and for plant physiology and pathology. The business of this station's seed control section consists of seed testing for purity and germinating ability, and the microscopic examination of oilcakes, bran, meal and flour for the detection of adulterations. Examination of diseased plants and the furnishing of instructions for their combat is the chief object of the other section of this station. As a special feature of the station's working programme may be mentioned the thorough inquiry into the nature of the life of the sugar-beet, from seed to seed, which has now been carried on with great care for some length of time. In 1901, the station examined 1,321 samples of seeds, 16 samples of feeding stuffs; the number of phytopathological cases the station has been engaged with during the year amounted to 3,013. For seed testing only are fees charged. In the case of clover seed, merchants are required to keep it in bags provided by the station with tags showing their purity. Originally (in 1878) the station was established for seed testing only. In 1898 it was separated from the academy and made independent, having now its own house and experimental plots. The staff of the station consists of the manager whose place at present is held by the professor of phytopathology, two assistants and one junior assistant; occasionally when required the staff is augmented by one or two hands. Annual expenditure :—£700.

Station for the care of farm animals. The chief object of this station is to treat surgical cases and to afford by so doing opportunity for instruction in veterinary science. This station, being in close connection with the chair for veterinary science, has no separate staff. It began its activity in 1892.

Station for meteorological observations. The business of this station is to make daily observations of temperature, barometric pressure, rainfall, sunshine and wind. Previous to 1865 observation was confined to rainfall only. The observations are wired day by day to the central station which is at Budapest. The average of temparature for Magyar-Óvár is 49·1° F., of rainfall 22 inches. This station being without a staff has no budget of its own; the post of observer is held by an assistant in chemistry.

Station for field crops and plant culture experiments. This station has been designed to promote the advancement of plant culture by carrying out experiments with the co-operation of the farmers in the various districts of Hungary, the objects of these experiments being the following:—Testing varieties of plants, study of typical soils, seed growing, amelioration, testing of fertilizers, study of grasses and the grass requirements of different localities and pot cultures. The distribution of seeds, plants and fertilizers, examination of plants and grasses as to homogeneousness are also part of the occupation of this station. In 1894 the stations was separated from the academy and made independent. Its staff consists of the manager, three assistants and two chemists. At present the management is entrusted to the professor of plant culture. The station has its own house and grounds. There is also a sub-station in activity at Arad. Annual expenditure:—£1,600.

Station for milk control and dairying. Milk control, determination of fat content and bacteriological investigations are considered to be the chief objects of this station which soon will be housed and equipped so as to be able to begin its activity. The station is also intended to be a permanent source of information for farmers as to the most practical methods in butter and cheese making. For annual expenditure an amount of £330 will be appropriated. The staff will consist of a manager and two assistants.

Permanent agricultural consulting committee. This committee consists of members of the educational staff of the academy and was organised in 1893 by special order of the Ministry of Agriculture as a body for information in cases of questionability in relation with agriculture and its branches. Information is given on applying by letter free of fee, but in cases which involve the necessity of a journey to the place where information is wanted, expenses must be paid by the applicant. Until now an average of 90 to 100 farmers have availed themselves annually of this institution.

STUDENTS' CLUBS AND CIRCLES.

Association for pecuniary aid. This association was organised in 1872 for paying board, etc., for students with inadequate means. It recruits its members year by year out of the number of those who enter the academy as well-to-do students. The fund of this benevolent fraternity amounts at present to £1,600, part of the interest of which is devoted to maintaining a "*mensa academica*," a kind of free board for students who are unable to provide for themselves.

Kazinczy Club. This was organised in 1859 with the aim of inculcating love of country and to cultivate Hungarian literature. The club takes its name from Kazinczy, a great Hungarian poet; it has established and maintains a fine library containing a number of volumes of agricultural as well as social literature. For the promotion of social intercourse among its members the club has established a reading room where most of the agricultural periodicals and daily papers issued in Hungary are kept on file. The yearly Kazinczy ball in January is a brilliant social festival.

Circle for vocal and other music. This circle is of old standing; it was re-organized in 1898 and is devoted partly to part songs for men's voices, partly to instrumental music. It was organised to promote practising of music as a pastime and pleasure and for social intercourse among its members. A band is formed by such members of this circle who are good musicians. This band which executes natural music as perfectly and ardently as any regular gipsy band of Hungary, contributes much towards the success of the entertainments and festivities arranged throughout the year by the students.

Agricultural Club. This was organised in 1875 for the promotion of agricultural knowledge and social intercourse among its members. It holds fortnightly meetings, gives lectures by its members and issues bulletins. At the meetings agricultural topics are discussed. The club invites competition for prizes for the best essays on agricultural themes.

Athletic Club. This was organised in 1881 and re-organised twice in 1895 and 1899. The aim of this club is the encouragement of athletic exercises and games and the promotion of physical culture and social intercourse among it members.

All the students clubs transact their business and keep their records in the Hungarian language.

LAND ATTACHED TO THE ACADEMY.

Farm of the academy. The farm of the academy comprises 590 acres; of these 343 are Government property; the rest is lease-hold. The arable land is 573 acres. An eight-course system of rotation is adopted on 150 acres and a ten-course system on 210 acres; the remainder of the land is devoted mainly to raising fodder crops. The following head of live stock are kept:—

Draught horses	10
Draught oxen	20
Cows of the Swiss-Simmenthal breed ...	60
Sheep	30
Pigs	20

By the keeping of the above enumerated stock is also pursued the breeding of fine farm animals for distribution and sale. The farm buildings are good and substantial and of modern style, farm machines and implements are employed to a great extent. The equipment of the farm on so considerable a scale enables the students to become practically acquainted with the management of live stock and implements. The annual production of milk is from 210,000 to 240,000 pints. Fresh whole milk sells at one penny the pint. Different kinds of cheese are made, selling at reasonable prices. In the vicinity of large towns, as is the case here it generally pays better to sell the milk direct from the dairy than to make butter or cheese. Growing of seed for sale and distribution is also part of the business of the farm. The land is well manured. As the rotations adopted differ materially from those common in Great Britain it is worth while to describe them here.

Eight-course system of rotation adopted on first class soil:—

1. Beets (mangels) for fodder (manured).
2. Spring or occasionally winter wheat.
3. Half vetches with rye followed by green maize (manured), half green maize (manured).
4. Winter wheat (manured).
5. Maize for seed (manured).
6. Spring barley, lucerne and sanfoin.

7, 8. Lucerne and sanfoin.

Ten-course system of rotation adopted on second class soil:—

1. Oats with vetches (manured), clover and grass seeds.

2, 3. Clover and grass seeds.

4. Winter rye.
5. Maize for seed (manured).
6. Winter cereals.
7. Hungarian grass (*setaria germanica*).
8. Maize for seed (manured).
9. Winter cereals.
10. Hungarian grass.

Garden of the academy. The garden of the academy consists of 20 acres; its area is devoted partly to nurseries of fruit trees as well as ornamental trees and shrubs, partly to the raising of vegetables and the cultivation of flowers. The water necessary for the garden is supplied by a wind motor. For bee-keeping two wooden bee houses are in the garden.

Vineyard. The vineyard has an area of 2½ acres and is stocked with a great variety of vines, grafted as a remedy against the attacks of the phylloxera upon American vine stocks.

Experiment plots for plant culture. An area of 20 acres is divided into 18 plots, $^7/_{10}$ acre each, and into 152 smaller ones, for the purpose of the cultivation of plants which for any reason have importance as farm plants. On and in the neighbourhood of this area, buildings have been erected for weighing, measuring, drying and curing the crops and seeds and for a supervisor's dwelling. On the experimental plots the students get easily acquainted with all kinds of field crop and forage plants and with the methods of their cultivation.

TIME TABLES

Showing how the time of the students of the royal agricultural academy is occupied during the week.

JUNIOR YEAR—WINTER TERM

(lasting from October to March).

Monday. Chemistry (8—9), farm animals (9—10), mineralogy (10—11), weights, measures, yields, prices, wages and other figures of importance to farmers (11—12). Mechanics (2—3), plant anatomy and physiology (3—4).

Tuesday. Chemistry (8—9), farm animals (9—10), mineralogy (10—11). From 11—12 the students are occupied in the chemical laboratory. Mechanics (2—3), plant anatomy and physiology (3—4).

Wednesday. Chemistry (8-9), farm animals (9—10), plant anatomy and physiology (10—11). From 11—12 chemical laboratory work. (2—3) Mechanics, (3—4) plant anatomy and physiology.

Thursday. Anatomy and physiology of farm animals (8--9), zoology (9—10). The time from 10—12 is devoted to work in the botanical laboratory and in the bone room. (2—3) Chemistry, (3—4) anatomy and physiology of farm animals.

Friday. Anatomy and physiology of farm animals (8-9), zoology (9--10). The two hours from 10--12 are devoted to work in the botanical laboratory and in the bone room. (2-3) Climatology. The hour from (3--4) is devoted to practical teaching on the premises of the farm and in the stables.

Saturday. Anatomy and physiology of farm animals (8—9), zoology (9—10). From 10-12 occupation in the botanical laboratory and in the bone room. (2--3) Climatology, (3—4) practical teaching on the farm and in the stables.

JUNIOR YEAR–SUMMER TERM

(lasting from March to August).

Monday. Plant culture (7--8), dairying (8—9), plant culture (9—10). The two hours from 10—12 are devoted to work in the chemical laboratory. The afternoon hours from 2—6 are devoted to the practical study of soils and plant culture in the fields.

Tuesday. Plant culture (7—8), cattle breeding (8—9), plant culture (9—10). Two hours chemical laboratory work. During the afternoon hours from 2—6 practical teaching in the fields and on the premises of the farm including plant culture, soils and machinery.

Wednesday. Chemistry (7—8), soils (8—9), cattle breeding (9—10). From 10—12 the students are occupied partly in the chemical laboratory, partly in the stables. In the afternoon hours the occupation is the same as on Monday and Tuesday afternoons.

Thursday. Botany (7—9), soils (9—10), agricultural machines (10—11). In the course of the afternoon the students are occupied partly in the laboratory of plant diseases, partly in the dairy.

Friday. Botany (7—9), chemistry (9—10), agricultural machines (10—11). Afternoon occupation the same as on Thursday afternoon.

Saturday—Botany (7—8), chemistry (8—10), agricultural machinery (10—11). Of the afternoon hours one is devoted to plant determination from specimens brought from the fields, one hour to matters connected with the management of the academy farm, and two hours are devoted to a round on the farm for the purpose of practical instruction

SENIOR YEAR—WINTER TERM

(lasting from October to March).

Monday. (8—9) Bookkeeping, (9—10) farm management, (10—11) political economy, (11—12) laboratory work. (2—3) Poultry breeding, bee-keeping, fish and silkworm-culture. (3—4) Rural technology comprising the distilling of spirits and beer brewing.

Tuesday. (8—9) Bookkeeping, (9—10) farm management, (10—11) political economy, (11—12) laboratory work. (2—3) Horse breeding, (3—4) rural technology.

Wednesday. (8—9) Bookkeeping, (9—10) farm management, (10—11) political economy. (2—3) Horse breeding, (3—4) rural technology.

Thursday. (8—9) Field crops, (9—10) farm management, (10—11) field crops. (2—3) Rural building construction, (3—4) poultry farming, bee-keeping, fish and silkworm-culture.

Friday. (8—9) Field crops, (9—10) sylviculture, (10—11) field crops. (2—3) Rural building construction.

Saturday. (8—9) Field crops, (9—10) sylviculture, (10—11) rural building construction. (2—3) Rural building construction, (3—4) meadow culture.

SENIOR YEAR—SUMMER TERM

(lasting from March to August).

Monday. (7—8) Rural law, (8—9) sylviculture, (9—10) statistics, (10—12) laboratory work. (2—3) Sheep and swine breeding, (3—4) rural technology comprising wine and sugar making.

Tuesday. (7—8) Rural law, (8—9) sylviculture, (9—10) statistics, (10—12) care of farm animals. (2—3) Sheep and swine breeding, (3—4) rural technology.

Wednesday. (7—8) Sheep and swine breeding, (8—9) farm management and valuation, (9—10) statistics, (10—11) viti- and horticulture. (2—3) Surveying,* (3—4) rural technology.

Thursday. (7—8) Veterinary science, (8—9) surveying, (9—10) farm management and valuation, (10—11) viti- and horticulture. The afternoon hours are devoted to practical teaching of sylviculture and surveying in the field.

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* Land surveying and levelling

Friday. (7—8) Veterinary science, (8—9) surveying, (9—10) farm management and valuation, (10—11) viti- and horticulture. The afternoon hours serve for practical teaching in viti- and horticulture as well as in bee-keeping and silkworm-culture.

Saturday. (7—8) Veterinary science, (8—9) surveying, (9—10) farm management and valuation, (10—11) viti- and horticulture. The afternoon is devoted to practical instruction in sheep-keeping and classification of wool.

Once a week the library is open to students. They are admitted to its use free of charge, the time only for retaining the books being restricted as a rule to two weeks.

In each of the four terms, not only are the theoretical lectures thoroughly carried out, but in every respect practical exercises with experiments and demonstrations* form an essential portion of the course. The experimental field, the garden, as well as the farm of the academy, although situated outside the town itself, are still within easy access.

Attendance at lectures and in the laboratories is compulsory. There are roll-calls at unannounced hours and absence is not tolerated except on account of illness, which must be proved by medical certificate. Failure to pass a satisfactory examination at the end of each term severs the student at once from his connection with the academy.

III. STATION FOR AGRICULTURAL EXPERIMENTS, MAGYAR-ÓVÁR.

By PROFESSOR ALEXANDER CSERHÁTI.

The station is divided into two sections, (1) the organization of field trials made by farmers, (2) carrying out of scientific experiments.

FIELD TRIALS MADE BY FARMERS.

The station places gratuitously at the disposal of experimenters seeds as well as chemical manures necessary for the cultivation of an acre of land. In return, the experimenters are expected to carry out the trials according to the instructions received, to return an account upon a printed form of the results obtained, and lastly to send to the station a sample of the realized crop. The results arrived at are published by the station in the official report at the expense of the Ministry of Agriculture and sent gratuitously to the farmers interested.

A. TRIALS OF NEW SPECIES.

Wheat. The experiments prove that the kinds cultivated in the western states of America are unsuitable for Hungary because all are backward and having a temperate climate we can only grow with success early corn. If wheat is not ripe when the hot weather comes the kernels shrivel in their husks, and the American kinds have for this reason produced shrivelled kernels. On the basis of these experiments and from other information we are able to say that here only Hungarian wheat can be cultivated with certain success and that it cannot be replaced by wheats producing more corn and more straw.

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* Demonstration with us is the term for eye-teaching.

Rye. The different kinds of foreign rye experimented on have only thrived on strong land and even then only in places. Thus "Petkuzi" rye only gave good results in the highlands of Hungary, not in the plains.

Hanna Barley. The experiments have proved that this is the best malting barley in every locality and at the same time most remunerative, only exceptionally has another kind given a better result. Hanna barley, scarcely grown before the experiment station was instituted, is to-day cultivated by the majority of our districts which grow malting barley and is taking more and more the place of the kinds of barley previously grown.

Ilmicz Barley. In the Alföld (Lower Hungary) malting barley has not been cultivated because of the dry and cold climate which causes it to become brittle like glass and rich in protein. The trials have shown that this native kind of barley if grown on the Alföld will produce a grain which, if not equal in quality to the best malting varieties, yet gives so large a yield that its cultivation is lucrative. In the provinces south of the Alföld known as Banat, as in other parts of the country, it gives worthless results.

Duppa Oats. Trials have been made with a large number of foreign varieties of oats. All these have yielded well in the first year, but, with one exception, have degenerated in the second and especially in the third year, the explanation being that they are dependent on high manuring. The exception is Duppa oats, which, although it has no higher claim than the native kinds, is early and gives an excellent crop. Its cultivation among us is increasing.

Maize. The yield of the native kinds of maize is poor, the ears are badly formed, the proportion of kernels with reference to the size of the cob is poor, there are many unfruitful stalks and, lastly, they are very late. The result of the trials with different kinds of maize is that "Pignoletto" and, above all, "Alcsúth" maize are the best. These ripen earlier and consequently are better to grow a year before wheat rather than Hungarian maize which, being late, is unfit for that purpose. Good results have also been obtained with "Florentine," "Reine de Prairie," and "Szalontha" maize.

Beans. It used to be supposed that the dry climate of Hungary was not suited for the cultivation of this excellent provender. The trials made at the station proved this to be a mistake and to-day many farmers cultivate this crop with success.

Sand Peas. These have been introduced by the station for cultivating in sandy districts unsuitable for growing fodder. The results have been most favourable. This kind of pea proved itself as good for seed as for fodder, and that in a soil so poor that not even the vetch could grow there.

Potatoes. Among the kinds tried "Hungarian Treasure" has proved the most remunerative for growing in the warmer parts of the country.

Fodder Plants. Three species have been found suitable for growing on sandy soils and are now largely cultivated, the "Red Vetch" which survives the roughest winters and is ready for cutting early in the spring, the "Purple Trefoil" and the "Golden Rod" (verge d'or) which grows on clay as well as sandy soils and constitutes a veritable blessing for land where neither clover nor lucerne will grow. The acclimatization of Seradella has not succeeded.

B. MANURIAL TRIALS.

Corn. Phosphatic manures, superphosphate and basic slag, have been proved greatly to increase the yield of autumn sown cereals in many cases, but have proved useless for spring sown cereals.

Meadow Land. On mixed soils basic slag alone, and on peaty or sandy soils basic slag mixed with kainit, has increased the produce and improved the quality.

Vines. In sandy vineyards the crop of grapes has been considerably increased by a mixture of phosphatic, nitrogenous and potash manures.

C. THE TREATMENT OF ALKALI SOILS WITH GYPSUM.

No permanent benefit was obtained on the alkali soils of the Alföld by treating with gypsum, the method which Hilgard found so beneficial in California.

D. EXPERIMENTS WITH NEW PLANTS.

In the current price lists of the majority of merchant seedsmen, new plants are recommended so strongly for cultivation that a large number of farmers allow themselves to be enticed, buy these at a dear price and leave the proving of them till after the bargain. In the majority of cases these famous plants are of small value. The station has tried a large number of these high priced and pretended novelties and by the publication of the results obtained it has attained the object which it aimed at; the merchants, rendered more cautious by the mishaps of the past, now send the seeds, before putting them on the market, to the trial station. If the results there obtained are worthless the merchants give up the idea of putting them up for sale.

E. CULTURE OF SEEDS.

Formerly no beetroot seed was grown in the country. The station having satisfied itself that the seed could be grown it supplies the best seed gratuitously to every farmer who agrees to grow it according to instructions given by the station and places at his disposal the necessary tools, and purchases from him the seed produced for three or four years. If on trial the seed is proved to produce good sugar-beet the farmer commences to grow it on a large scale, the station exercising such control as is necessary to make him observe the rules under which the culture of the seeds ought to be practised.

SCIENTIFIC EXPERIMENTS.

A. Pot Cultures.

The objects of the experiments are as follows:—

1. Manurial trials on different soils.

2. Manurial requirements of red capsicums (paprika), onions and maize.

3. The effect of lime and magnesia on trefoil.

4. The effect of potash on the quality and quantity of barley in various soils.

5. The effect of potash on oats in various soils.

6. Comparative effect of silicate as against sulphate of potash on six different soils with potatoes, tobacco, sugar-beet and barley.

7 and 8. Comparison of the effect of the citrate soluble phosphate in basic slag and the water soluble phosphate in superphosphate of lime on potatoes, sand peas, green maize, wheat and barley in six different kinds of soil.

9, 10 and 11. Experiments with phosphatic and nitrogenous manures on sugar beet.

12. Trials on the comparative effect of alinite and nitrate of soda and on the use of alinite to increase the solubility of bone meals.

13. The manurial value of distillery refuse on sand and clay soils for potatoes and tobacco.

B. Field Experiments.

1. Study of the circumstances which exercise an influence on the production of seed in beet.

2. Trials with alinite.

3. Influence of heredity on the fertility of potatoes.

4. and 5. The improvement of wheat and maize.

6. Manuring of Tobacco with "jadov."

*IV. STATE STUD FARMS.**

Horse breeding in Hungary, being of imminent interest both from an economical and military point of view, is the oldest branch of live stock breeding encouraged by the State. There is no other State in Europe which spends more for this purpose. To this can, perhaps, be ascribed the world-wide renown of the Hungarian horse.

There are four State Stud Farms (Kisbér, Bábolna, Mezőhegyes and Fogaras), where sires are reared with the purpose of supplying the needs of the farmers. In Kisbér are bred English pure-bred and half-bred, in Bábolna Arab pure-bred and half-bred, in Mezőhegyes sturdy English half-bred, Big and Little Nonius (Anglo-Norman), Gidran (Anglo-Arab), and in Fogaras Lipiza races.

	Ploughland.	Meadow.	Pasturage.	Garden.	Vineyard.	Wood.	Farm buildings, roads, etc.	Morass, water.	Railway.	Barren land.	Let on lease.	Total.
Kisbér	15,697	1,580	1,020	143	109	7,855	351	57	—	1,025	44	27,881
Bábolna	13,674	277	640	57	25	1,766	956	—	—	153	5	17,553
Mezőhegyes	59,129	1,368	4,288	455	5	3,596	4,925	262	96	30	168	74,322
Fogaras	9,095	1,865	4,703	—	—	877	417	—	32	506	1,991	19,486
Gödöllő	16,877	1,877	5,599	96	203	657	983	12	—	128	62	26,494
Total	114472	6,967	16,250	751	342	14,751	7,632	331	128	1,842	2,270	165,736

In these studs are altogether 112 pedigree stallions and 1,485 mares, the whole stock consisting at the present of 5,015 animals.

In connection with the studs there are farms which produce forage for the stallions, good sires of other breeds, and seeds for distributing to the public.

Care is also taken to make a profitable business out of the stud farms and to serve as a model to farmers in general.

The agriculture is very multifarious and intensive; besides the cereals, many roots, forage and green crops and commercial plants are grown.

Amongst the live stock the greatest weight is laid upon cattle and pig breeding. In Kisbér—Simmenthal and Bonyhád, in Bábolna--Simmenthal, in Mezőhegyes—cross-bred Simmenthal with Kuhland and thoroughbred Hungarian, in Fogaras—Pinzgau, in Gödöllő—Pinzgau and Innthal cattle are bred.

The favourite pig breed is the Mangolicza, but in Kisbér the Berkshire.

Several hundred sires and about 1,000 tons of seed are distributed by the stud farms every year.

The area of the farms in acres is given on page 153.

V. ROYAL HUNGARIAN STATE DOMAIN, BÁBOLNA.

May 21st, 1902.

I. CROP ACREAGE.

Cereals.			*Fallow Crops.*		
Wheat	1161	acres.	Maize	590	acres.
Rye	389	,,	Potatoes	62	,,
Barley	438	,,	Beet	413	,,
Winter barley	17	,,	Carrots	13	,,
Oats	957	,,	Seed beet	14	,,
Winter oats	2	,,	Pumpkins..	33	,,
Pulse.			Fallow	275	,,
Summer tares	99	,,	*Fodder Crops.*		
Horse beans	63	,,	Lucerne	116	,,
White beans	3	,,	Esparto	302	,,
Trigonella	7	,,	Clover and grass mixtures	1035	,,
Grass, &c.			Tares and oats	802	,,
Meadow	352	,,	Tares and barley.. ..	49	,,
Osiers	371	,,	Peas and barley	118	,,
Garden	34	,,	Maize for fodder.. ..	318	,,
Vineyard..	17	,,	Mohar grass	309	,,
Forest and plantations..	1003	,,			
Unproductive	638	,,	Brought forward.. ..	5551	,,
Carried forward ..	5551	,,	Total	10,000	,,

II. STAFF.

Workmen.

Carpenter and assistant	2
Joiner and assistant	2
Stablemen and helpers	5
Engineers and assistants	8
Clerk	1
Chimney sweep and apprentice	2
Blacksmiths and assistants	5
Bricklayer	1
Miller and assistants	9
Sadler	1
Brickmaker	1
Vinedresser	1

Servants.

Margarine makers	3
Foremen	9
Keepers	4
Coachmen	48
Stockmen	195
Csikos	2
Shepherds	5
Swineherds	4
Verger and sexton	2
Hospital attendant	1
Hall porters	3
Night watchmen	6

Various.

Foresters	2
Kindergarten instructor	1
School gardener	1
Office boy	1
Midwife	1

III. STOCK.

Horses (not including Arab stud).

Stallions	2
,, foals, 1 year	4
,, ,, weaned	1
,, ,, at foot	8
Mares	62
,, fillies, 2 year old	12
,, ,, 1 ,,	12
,, foals weaned	1
,, ,, at foot	5
Geldings	48
,, 3 year old	6
,, 2 ,,	8
,, 1 ,,	6
Total	175

Sheep.

Rams	4
,, 2 year old	24
,, 1 ,,	55
Ewes	379
,, 2 year old	113
,, 1 ,,	126
Lambs	288
Total	989

Fattening Stock.

Cattle	140
Sheep	108
Swine	6
Total	254

Draft Cattle.

White draft oxen	352
Coloured ,,	16
Buffaloes	6
Bullocks, 2 year old	14
,, 1 ,,	10
,, weaned	9
Total	407

Breeding herd.

Bulls	6
,, 1 year old	10
,, weaned	26
,, not weaned	17
Cows	135
Heifers, 3 year old	17
,, 2 ,,	58
,, 1 ,,	52
,, weaned	34
,, not weaned	26
Total	381

Swine.

Boars	7
,, 1 year old	22
,, weaned	157
Sows	49
,, 1 year old	27
,, weaned	263
Porkers	90
Total	615

VI. CENTRAL CO-OPERATIVE CREAMERY SOCIETY IN BUDAPEST.[*]

This society was founded in the year 1883 by farmers living in the vicinity of Budapest, with the aim of securing a good sale for their dairy produce and of providing the public with good milk and milk products.

The business began in a small hired house with a dairy sale of 1,300 gallons of milk, but, gradually growing, in 1886 a large creamery was built in its own ground, where it stands to-day. In 1900, when the daily sale had grown to 7,700 gallons, the premises were found too small and so it was enlarged on a very grand scale. At the same time it was transformed and arranged to meet all hygienic and modern demands.

The creamery occupies an area of two acres. The milk room is 87 yards long and 16 wide; here are placed two cream separators (Alfa-separators, each with a capacity of creaming 550 gallons of milk an hour) three gravel filters, milk pumps, reservoirs, cooler and bottling apparatus. In immediate connection is a room for washing and steaming the cans.

Next this is the churning room with three churns, each with a capacity of 65 gallons, a butter worker and an ice-chest with white marble slabs having a capacity for 11,000 lbs. of butter.

The steam for driving all the machines, for heating the water and warming all the rooms is supplied by two boilers each with a heating surface of 700 square feet.

There is a separate splendidly equipped division for infants' milk according to the patent of the two chemists Székely and Kovács. This milk has the greatest similarity to mother's milk. The patent process is the following:—the milk is first warmed up to 140° Fahr. and then the superfluous casein is separated from it by means of fluid carbonic acid. The milk so prepared is quite sterilized and there is no necessity for mixing it with water.

The creamery receives every day about 8,750 gallons of milk from 98 farms, of this 3,250 gallons are delivered to the public by means of 45 shops and 25 milk carts. Besides this 4,000 gallons are delivered to hospitals and other public institutions and wholesale customers. On an average 1,500 gallons are used for making cream and butter. The butter is of the best quality, well known not only at home but in foreign markets too:—in Berlin, Paris and London, where it is a great favourite.

The creamery has a staff of 2 directors, 30 employés and 260 carters and other workmen.

Last year the creamery society paid to its members for the contributed milk, after the deduction of all expenses, about £80,000.

*VII. MARKET HALLS IN BUDAPEST.**

Before the building of the market halls the inhabitants of Budapest were supplied with provisions by means of open market squares. This not being suited to the sanitary demands of a rapidly developing town, six market halls have been built of late years at an expense of £500,000.

The Central Market Hall disposes of its provisions wholesale and retail, the other market halls only retail. The Central Market Hall was built on a plot of 2½ acres, the others each on a plot of ½ to 1 acre.

The Central Market Hall is, as it were, the providing spring of all other market halls, shops and still existing street markets. It is built on the bank of the Danube and is in connexion with a landing stage, from which an underground passage leads to its cellars. The hall is also a terminus for provisions.

To keep the provisions fresh there are, besides the cellars, refrigerating rooms, and tanks for the fish filled with fresh flowing water. The wares are conveyed by means of eight lifts from the cellars to the ground floor and gallery.

The hall is divided and let out into various stalls and open and closed stands, from which alone the hall derives its income. Carts and vans can drive through the whole length of the hall; on the left side of the principal entrance are the haberdashers' stalls, on the right the wholesale merchants. In the gallery, flowers, vegetables and fruit are sold.

From the very early morning hours till evening there is a great trade in meat and vegetables. There are also two firms commissioned by the city who take in provisions sent from the country and under the control of the officers of the town sell them to the public. The fee of commission must not exceed 8% of the selling price. These commissioners are bound to deposit a guarantee of £500.

For the examination of the meat and other articles five veterinary surgeons and several chemists are employed.

The Central Market Hall is lighted, and the lifts are worked by, electricity.

Every day all the selling prices and once a week the retail prices are fixed and published in the official price-list. There is an official gazette, which publishes the price-lists and the more important facts of the trade.

The market halls were established at the beginning of the year 1897; in that year 28,000 tons of market produce were delivered into the Central Market Hall, and in 1901, 56,000 tons, that is to say double the quantity of that four years before.

*VIII.—HUNGARIAN FARMERS' CO-OPERATIVE SOCIETY FOR SUPPLYING THE MARKET HALL.**

A few years ago the open market places of Budapest were closed by the splendid city market halls which had been constructed to furnish the people of Budapest with ample and cheap provisions. It was due to this change that the Hungarian Farmers' Co-operative Society for supplying the market halls was established under the auspices of the Hungarian National Agricultural Society. This co-operative supply has undertaken the task of storing and selling all kinds of provisions sent to the metropolitan centre by any of its members or by any other farmer. The value realized is from time to time re-imbursed, excepting a small sum for manipulation, to the producer. This co-operative society gives hints to farmers as to what kinds of provisions to produce, and as to the way of packing them for sale. Two pamphlets have been printed by it in several thousand copies, one on "Articles of Food," and the other on "Fruits." Both can be had on application free of charge.

It is an important matter for all farmers, living far from the town and being unable personally to take their products to the market halls, to know exactly what products may be offered for sale and at what season. A careless way of making up these provisions into parcels, without sorting them in an attractive manner, might cause a fall in price, or even render the goods of no use. The advice given in these pamphlets will, if carefully attended to, prevent such disappointment. If the lines of trade are faithfully followed out, no such goods should arrive in such a state as to hardly pay the carriage. And besides, small quantities that could not probably be forwarded to the metropolitan market, can now be sent here through the instrumentality of the Co-operative Society.

At the last general meeting the society had 215 members who possessed 778 shares amounting to £3,242. In the year 1901 the society brought into the market and sold 7,685 parcels of provision of 14,638 cwt. at a total sum of £21,456. Out of this there was 1,327 cwt. of beef, 435 cwt. of veal, 262 cwt. of pork, 39 cwt. of mutton, 245 cwt. of lamb, 122 cwt. of cured meat, 12 cwt. of preserved meat, 382 cwt. of game, 169 cwt. of live poultry, 190 cwt. of dead poultry, 1,620 cwt. of eggs, 5,430 cwt. of potatoes, 782 cwt. of greens, 941 cwt. of butter, 561 cwt. of cheese and curds, 665 cwt. of sheepmilk-cheese, 166 cwt. of nuts, 152 cwt. of asparagus, 11 cwt. of honey and 2,027 cwt. of fruit.

The Co-operative Society further extended its activity last year and tried to organise an export department for those articles of food that are produced in great abundance in Hungary. The first attempt of this kind to have eggs collected and stored by co-operative societies, has met with great success.

Eggs, poultry and feathers are farm products which sell very well and yield a fair return to small farmers. This, however, can only be reached through the agency of the co-operative centre. It was with a view to making this line of business work more easily that, with the aid of the Ministry of Agriculture and also of the Hungarian National Agricultural Society, a new branch has been started in connexion with the Hungarian Farmers' Co-operative Society at the central halls for eggs, poultry and feathers.

The egg department is organised in the following manner:—The co-operative society sends an expert at its own cost to all active farm co-operative societies that desire to adopt this new method of collecting eggs. Any member of the country society may thus, in a few days, learn how to gather, pack and forward eggs. The collecting and selling of eggs takes place as follows:—

(*a*) The Hungarian Farmers' Co-operative Society sends word week by week to the country sections telling them how many eggs it is inclined to accept for 2 crowns (1s. 8d.). This being done, eggs in the country are bought up and paid for by the local treasurer, and as soon as a box holding 1,440 eggs is filled, it is sent at once, not prepaid, to the Budapest central store.

(*b*) On the arrival of the boxes at the centre, the price of the eggs is immediately re-imbursed by the Hungarian Farmers' Co-operative Society.

(*c*) 1s. 8d. extra is paid by the centre for the carriage of each box and 2d. for straw.

(*d*) Boxes, invoices and postcards are given gratis by the centre to the country section.

(*e*) Eggs transmitted to the Budapest centre are examined, sorted and exported. A net profit, after the subtraction of export expenses is afterwards paid to the country section. The net profit is distributed amongst members of the society, in proportion to the value of wares sent by them.

It may be gathered from the above that the farmers get in this way the regular market value for their product and an export profit as well. The producer sells his product directly to the consumer, and fetches a higher price, the transaction being of advantage also to the consumer.

The Hungarian Farmers' Co-operative Society commenced this branch in July of last year. The organization of country sections is still vigorously being carried on. During the first four months of this year a total value of £12,500 has been reached by the central society and 220 country branches, for the export of eggs to Germany and London, where there is a great demand for "Aurora" Hungarian Co-operative Produce.

*IX.—GRAIN-ELEVATOR IN BUDAPEST.**

The Grain-elevator is the property of the Capital. It was begun in 1879 and finished in 1882, at an expense of £312,500. It is rented by the Hungarian Discount and Exchange Bank.

The elevator consists of cellar, ground floor and upper stories, connected by hydraulic lifts for the warehousing of the grain. The emptying and loading of the boats and waggons and the management of the grain is performed by motor power.

Goods arriving by boat are lifted by buckets attached to an endless band into weighing-bins passing through which their weight is marked off and by means of spouts they are directed into the silos; 147 qrs. of grain can in this manner be lodged in an hour.

The loading of the boats takes place in the following manner:—the grain falls slowly from the silos on to an endless band, thence to the weighing-bins and finally through spouts into the boat.

The same method is employed in the emptying and loading of the waggons. For this purpose there are four pair of railway lines through the length of the building and ten endless bands, each one with a carrying capacity of 79 tons an hour, that is to say that in an hour 790 tons of grain can be warehoused from waggons.

The elevator is equipped with a perfect machinery for cleaning the seed, by which dust, chaff and foreign substance can be removed. The result is especially excellent in the sorting of the barley.

Four years ago the elevator was also fitted up with a plum-dryer, to preserve the plums intended for foreign markets, especially for England, Sweden and North-Germany. This appliance is in great request, for only plums prepared by this method (" double prepared ") find buyers in England. Every year 295,000 tons of goods pass through the elevator.

*X.—NATIONAL AGRICULTURAL SOCIETY OF HUNGARY.**

The beginning of the social organisation in Hungary of individual farmers is not of a recent date. A movement of this kind was started as early as the first decades of the last century by the principal leaders of the nation, who had been unaware of similar movements in foreign countries. It was practically carried out, when, during the session of the Diet of Pozsony, in 1825—27, a horse breeding union was established in Pozsony, through the kind offices of Counts István Széchenyi and Mihály Eszterházy, and also of Baron Miklós Wesselényi. This union, modified and re-constructed on July 11th, 1830, adopted the name of " Breeders' Association " and formed the beginning, so to speak, of the " National Agricultural Society of Hungary."

The National Agricultural Society may therefore be traced back to that period. There were 301 members entered on the list of the

Breeders' Association, whose catalogue is published in the almanac of 1830. The chief end of the association in Pest was to provide means for the furtherance of the breeding of horses, sheep and cattle, and other kinds of farm animals. The first show was held here on the 6th and 7th of June, 1830. Competitions were held and prizes awarded for colts and also cattle and sheep.

The founders of this association desired to extend their operations to all the branches of farming, as may be seen from the annual report of that date:—"Success and consolidation in the work of the Breeders' Association may be said to depend solely on the united efforts of our compatriots. Should they back it according to its merits, our institution would in time to come prove to be a more useful one, extending over the whole field of farming."

A resolution also in favour of purchasing a site was passed at that meeting, the same site (Köztelek) on which the agricultural society's building has since been erected. The manor, bought from Count Károlyi, was on the motion of Count Széchenyi in 1833 called "Köztelek" (common land or ground), and that name is affixed to the front of the edifice ever since. The society's show of that year was the very first exhibition of farming implements in the country.

The year 1834 is of special interest as the King and several members of the dynasty joined the association.

The public meeting of June 8th, 1835, passed a vote in favour of doing away with the old designation of "Breeders' Association" and adopted the term of "Agricultural Society," extending its operation to *all the branches* of field farming.

The purpose of the newly established society was to publish books and periodicals, and to get the people interested in horse races, cattle shows and machine exhibitions. Since 1837, prizes have been offered by the society for the writing of books and essays.

There was a suggestion in the new rules of the society as to the foundation of country branches. Representatives from the country were asked to propagate the idea and to organize in one or two counties a new branch that should take an active part in the work of the central society. The first branch of this kind was established in the county of Szatmár in 1837. Delegates sent from the country to meetings in the centre, and *vice versa*, helped, by personal intercourse, to strengthen the link of common interest. The appearance in the 'forties of several representative noblemen from the country, gave an additional lustre to public meetings.

In 1838, plans and proposals were set on foot towards the foundation of a Central Agricultural College.

It was agreed to and resolved in a meeting of 1840 (June 6th), that in order to meet the requirements of a wide field of work, there was urgent need of more capital, and also that steps should be taken for the society to be legally recognized. Archduke Joseph was asked to stand patron to the society, which office he filled until his death, which took place on 13th January, 1847. He was succeeded in this capacity by his son, Archduke Stephen.

A great deal might be said of the society's activity. Great importance was attached to the perfecting and extension of scientific knowledge. Agricultural reports were published in 1837. A new magazine, "the Hungarian Farmer," appearing twice a week, was edited by the society. A "Field Calendar" for 1840 was also published by the Society in 1839.

Prize competitions still continued to create a great interest. In 1840 a prize essay, for which 130 ducats was awarded, influenced to a high degree the agricultural knowledge of the people, and was reprinted several times as "The Farmers' Mirror." Since then various other questions have been set for prize competition.

Some useful experience has also been gained from the instructive inspection of farms of first-class management, as well as from open debates at public meetings.

The shows, hitherto in vogue, of horses, cattle and sheep, were later on added to by the exhibition of silkworms, poultry and pigs. The show of sheep in 1841 was made more interesting by the introduction of sheep-shearing, and stalls for woollen goods and sheepskin cloaks. Meanwhile samples of wool were sent to foreign parts, in order to make the society's influence felt in wider circles. A great number and variety of machine exhibitions followed. A ploughing competition was held as early as 1841. Exhibitions of various farm products, and also of manufactured articles as sugar, flour, grapes and other fruit, and wine took place and were repeated at intervals. The society also founded a national vineyard and orchard for purposes of technical instruction.

By the year 1847, 22 county and provincial branches had joined the central society. Public and committee meetings were of great interest and very well attended.

In consequence of the war of 1848 the National Agricultural Society was obliged to suspend its activity.

A public meeting was held in the presence of State Commissioner John Zlinszky on the 9th and 10th of June, 1851, in course of which a stated number of officials were elected. The Government of that time, however, did not yet consider it safe for a society, with branches all over the country, to be allowed to adopt an independent line of work; and State Commissioner John Zlinszky, next day pronounced the elections void, and entrusted the care of further management to a committee headed by Count György Andrássy.

A very successful show of great importance was opened by the society on the 6th June, 1857, which lasted for five days. It was managed on a grand scale, unequalled before in Hungary. It served as a stimulus for the actual re-construction of the society.

At this period, both the Government and the nation itself got tired of the long spell of oppression and ill-will. Both parties began to feel that they had had enough of it that they were in sore need of each other's help. Those patriots who had retired during the outbreak, desired now to leave their seclusion and to take an active part in the life of the nation. They felt very keenly that agricultural activity was the one most needed by the country. And on this platform, isolated from politics and almost encouraged by Government there was a happy chance for patriots of all shades of opinion to meet without any bias. The society now extended its work in all directions, and was itself strengthened in the course of its robust activity.

The publishing of prize questions on different subjects occupied the first care of the society, after having been re-organized. Inspection and description of more noted farms date back to this time; the estates of Mágócs and Kisjenó, belonging to Comt Lajos Károlyi and Archdukes Stephen and Joseph respectively, as well as the farms of Ferencz Fekete of Kossuth and György Szilassy of Pánd, were one after the other visited and described. The society also took great pains to forward the re-opening of the Agricultural Institute of Keszthely, which met with success in 1865. It took similarly a leading part in the foundation of the agricultural colleges both of Kassa and Debreczen.

In 1861, 150 acres of land, close to the railway station of Rákos-Palota, were given to the society by Count Stephen Károlyi. It was named "Istvántelek" (Stephen manor) in honour to the donor, and was to be the site of an experimental station and an institute for the education of head labourers and farm hands. Even before 1848, the society had occasion to give advice and to make propositions in certain branches of industry and agriculture, and since its re-organisation the society has kept on fulfilling this task.

A new Hungarian Land-credit Society was started by the agricultural society on 1st July, 1863, on the proposal of György Majláth, junior.

The society held a grand general exhibition in 1857, which was in 1858 followed by a fine sheep and pig show at Köztelek in Pest. At the same time there was a ploughing competition at Rákos-Palota; also an exhibition and competition on a grand scale of machinery and farming implements in 1859 at Ercsi; there was another sheep show in 1860, and a very successful ploughing and machine competition at Tót-Megyer. The society was fairly well represented at the world exhibitions of London (1862) and of Hamburg (1863), also taking part in the Imperial exhibition of Vienna in 1866.

The latter was preceded by a very important exhibition held in the Pest Park in 1865. It was not in any way noted for a great variety and excellency of objects, but it became all the more important in political respects. A loyal invitation on the part of the society was graciously accepted by the King, and so the exhibition served as a starting point, towards the constitutional treaty of 1867, and became an influential factor in political life.

The first National Agricultural Congress was convened and presided over by the Ministry of Agriculture in 1868 at the Köztelek, where many agricultural questions of great importance were discussed. Stipends were granted through the aid of the Ministry for travelling missionaries both at home and abroad for the study of vine dressing and other branches of farming. Another competition of harvesting and mowing machines was brought about at Ercsi in 1869. A pig show held by the First Hungarian Pig Fattening Company in the Pest-Kőbánya grounds, and a fruit show in the National Museum by the National Hungarian House-wife Union, were both arranged by the society.

The Hungarian section of the Vienna exhibition in 1873 was also undertaken and brought to a happy issue by the society.

Count Gyula Szapáry was elected President of the society in 1875. This period is marked by a clear line of useful work, with a considerable change in the prospects of the society.

The society prepared and directed the work of the Hungarian department at the Paris Universal Exhibition of 1878. In the same year, a National Exhibition was held at Székesfehérvár, in conjunction with the County Agricultural Society, and with the second National Agricultural Congress at the same place.

At the committee meeting of February 10th, 1879, it was proposed by Count Sándor Károlyi that the society should make arrangements to hold such open conferences as could on invitation be attended also by members of other institutions and by qualified men outside the pale of the society. The Great Agricultural Conference of 1879—1880 was the direct outcome of this motion.

The chief aim thenceforth of the society was directed towards the development of agricultural policy, and the rise and security of net profit in farm products.

According to the spirit of the second National Agricultural Congress of Székesfehérvár and of the Great Conference, a co-operative organization was established among the country and county agricultural societies, in conjunction with the National Agricultural Society of Hungary. This co-operative union of agricultural societies was superseded in 1896 by an organization of county agricultural societies into a common bond more closely knit together, under the name of "National League of Agricultural Societies," the executive committee of which is that of the National Agricultural Society of Hungary.

Along with these movements calculated to create a vigorous life in the society, a literary organ was also established in 1880, its title being "Hungarian Land," an agricultural journal.

It was due, to a great extent, to the influence and efforts of the society, that, after the several departments of the agricultural, industrial, commercial ministries had been re-constructed, a separate ministry of agriculture was organized, and Count Gyula Szapáry, the president of the society, appointed Minister of Agriculture. He then resigned the presidency at the annual meeting of April 28th, 1899, and was succeeded by Count Aurel Dessewffy.

The present director Mr. Géza Forster was appointed through the committee meeting of February 26th, 1891.

A new gazette was at this time established by the society, bearing the title of "Köztelek." The first number appeared in October, 1891, causing some alteration and re-arrangement in the staff, Stephen Baranyay being appointed administrative secretary and Károly Baross editor of the paper.

The following are the names of those who were on the society's staff at the beginning of this year: Géza Forster, director; Zoltán Szilassy, secretary and editor; Gyula Rubinek, administrator; Pál Jeszenszky, secretary; Mózes Fedák, sub-editor; Ferencz Szábo, vice-secretary; Dr. Gyula Darányi, solicitor; Lajos Kirschner, treasurer; Nándor Murányi, bookkeeper; János Mihe, clerk.

Important measures bearing on agriculture are referred by the Ministry of Agriculture to the National Agricultural Society of Hungary. Propositions to all ministries and chiefly to the Ministry of Agriculture, made of its own accord or in consequence of reports of the country agricultural societies, are also of no rare occurrence.

A monthly periodical, "Hungarian Agricultural and Historical Review," was issued in 1894 by subventions from the Ministry of Agriculture and the Hungarian Academy of Sciences.

In order to spread among the people a knowledge of farming, the society has inaugurated a series of lectures on various important topics, which are still held during the winter.

After the successful National Exhibition of Székesfehérvár, it was thought fit to hold the national exhibitions only at great intervals, partly to spare expense, and partly to get time enough for a comparison of progress. In keeping with this idea, there was in Budapest a grand fruit and garden produce show from 15th to 17th October, 1881, in conjunction with the Women's Industrial Society. There was also in Agárd (Fejér country) an important international competition of ploughs and other farming implements from 25th to 27th September, 1882. The society also took part this year in the Triest exhibition.

The society had previously made arrangements with the National Industrial Society of Hungary, to bring about a national industrial and agricultural exhibition at Budapest. This idea was later on embraced by the Government itself, and it was developed into the National Exhibition of 1885. Barley shows, for brewers, were begun in the year 1884. Another was held in 1886. Part of this exhibition was sent over to Norway, and was awarded a gold medal. In the early spring of 1887, there was a machine competition held in Hatvan, in conjunction with the Pest County Agricultural Society, followed in Fülek by another competition.

The society was represented at the World Exhibition of Brussels from May to September, 1888, The same year an exhibition was held at Nagy-Kőrös, together with a breeding stock fair. The society took part in the proceedings of the International Agricultural Congress in Paris, 1889. The same year, a harvesting machine competition was held at Szajol. In the year 1890, a great part of the society's vacation season was taken up by the Vienna World Exhibition and incidents connected with it. On June 28th the same year a *peronospora* sprinkling competition was held in the vineyard of the Agricultural College of Keszthely.

Grand horse shows were held in the Budapest parks in 1891, and at the same time the society took an active part in the proceedings of the National Farmers' Congress organised by the Farm Managers' Benevolent Society. An international harvesting machine competition was held, in conjunction with the Upper Tisza District Agricultural Society, at Nyiregyháza on 9th and 10th July, 1892.

The society also puts forth great exertion in the founding of various co-operative societies on agricultural lines. The first of this kind of society was the Buda Wine Cellar Union which was closely associated with the Agricultural Society. The head-quarters of this union was the Vinedressers' College of Buda, but this was taken over by the Ministry of Agriculture in 1881, and the union consequently was dissolved. Its rôle was taken up shortly afterwards by the Central Model Wine Cellar Union. This was followed by another co-operative society, in 1882, namely, the Central Milk Supply, which is to furnish the metropolis with unadulterated milk and milk produce, and to spread in the country also the building of useful dairy farms. Another co-operative society was the Hungarian Farmers' Co-operative Society, which undertakes to procure all articles of consumption, also to sell all kinds of farm products. In the year 1896 there was a new society of this description established, that is the Market Hall Co-operative Society; and in 1900 another, namely, the Farmers' Insurance Co-operative Society.

During the last decade of the society's activity, there was a Third National Farmers' Congress in Budapest from May 19th to 23rd, 1895, which is considered to have been of very great moment, its influence being felt far and wide. This important move of the society met with unparalleled success, and the congress was able to work out a detailed programme of agricultural doings for the future, one of the best of which is the organisation on social lines of common interests called into existence by the Fourth National Farmers' Congress in 1896.

One of the most memorable incidents in the society's work in 1896, was the part taken by it in the millennial fête of the thousand years' jubilee of the conquest of Hungary by the Hungarian Nation. In a general meeting held on 28th October, 1894, after resolutions to this effect had been passed in several committee meetings, a motion was unanimously carried that the society should take a prominent part in different sections of the National Jubilee, and that it should in a direct way join the celebration through two chief items:—firstly, a collective exhibition, at which the National Agricultural Society of Hungary and the county and district agricultural societies, all united, would give a combined picture of the work done by these societies; secondly, through the organisation of the Fourth National Farmers' Congress.

Since that time the society has gained both in strength and in activity, and secured for itself considerable weight and dignity. The society has proved to be a true representative of the social and other interests of Hungarian agriculturists.

XI. NATIONAL CENTRAL CREDIT CO-OPERATIVE ASSOCIATION.

In Hungary the organization and activity of co-operative associations is regulated by the commercial law of 1875 and by the new co-operative association law passed in 1898.

The commercial law of 1875 leaves a wide field for the activity of co-operative associations, and does not limit their dealings to their own members alone.

The new co-operative association law of 1898 prescribes narrow limits both with respect to the field of activity and to the extent of the operations, similar to the principles existing in these respects in Germany; on the other hand it assures to the co-operative associations based on this new law wide-reaching privileges, which consist of tax and stamp exemptions and certain advantages in validating claims; and finally it established a capitalizing centre for the co-operative associations, existing under the new law, which exercises the rights of supervision and control over these associations. This centre is the "National Central Credit Co-operative Association" formed under Law XXIII of 1898.

Only such co-operative associations can unite with this centre, as are based upon the new co-operative association law.

The foundation capital of the National Central Association is raised by the founders, and by the co-operative associations banded with it as regular members.

The founders brought, as their share of the foundation capital, £174,250, and the associations as regular members £32,700. The State entered the list of founders with £42,000, and by reserving to itself the right of appointment of the president, the two vice-presidents and, in addition, two directors, as well as of approval of the election of the managing director, and by exercising permanent supervision by a Government commissioner, it exercises a deciding influence.

Hitherto (during 3 years) 1,328 co-operative associations have united with the National Central Credit Co-operative Association with 270,000 members, who subscribed for 560,000 shares a total of £1,145,800.

The members in their respective co-operative associations make use of the credit by means of notes or obligations, and so far as the co-operative associations are unable to meet the demands for credit from their own capital and from the deposits, they obtain the necessary money by indorsing the notes in their hands (portfolios) and assigning the obligations in their hands (portfolios) to the said National Central Association.

The money resources of the National Central Association are the following:—The aforementioned foundation capital of about £207,000, State and savings deposits amounting to about £475,000 in value, sale of interest-bearing bonds issued under legal authority (to day about £480,000 in value), and finally rediscount of notes.

The small co-operative associations have afforded their members up to to-day about £2,300,000 credit, of which they covered about £800,000 from the dues on their own shares and from the savings deposits of their more wealthy members, while the lacking £1,500,000 they borrowed from the National Central Association.

The 1,328 co-operative associations attached to the National Central Credit Co-operative Association are with few exceptions credit co-operative associations; 1,250 of them are distinctly agricultural and about 70 industrial in character. Of the industrial, about one-half are co-operative associations for the obtaining and producing of raw materials. Among the agricultural, are associations for the sale of grain, wine and other products.

Budapest, 21st May, 1902.

*XII. POULTRY BREEDING FARM IN GÖDÖLLŐ.**

This State Poultry Farm was built in 1897 on a plot of 25 acres in the grounds of the Gödöllő Estate, 2 miles from the railway station. The aim of the farm is:—

1. To breed thoroughbred native and foreign poultry and, by distributing these, to improve poultry keeping in general;

2. To make experiments in appropriate breeding, cramming and fattening;

3. To give practical and theoretical instruction to the pupils of the farm. A one year's course is held for 10 pupils, who live on the premises.

The live stock consists at the present of 240 hens (Langshan, Plymouth, Dorking, Hungarian and bare-necked races), 20 Embden geese, 30 Peking ducks, 30 bronze, 30 French and 30 Hungarian turkeys.

*XIII. BEE FARM IN GÖDÖLLŐ.**

The Gödöllő bee farm is situated in the grounds of the Estate on a plot of 62 acres.

The purpose of the bee farm is to act as a model of pattern bee keeping; to make scientific and practical experiments in apiculture, in the preparation of honey and wax and in the cultivation of honey-producing flora; to give practical instruction to workmen in bee keeping and in the preparation of the implements used in apiculture; to hold short courses for teachers, priests, gardeners and small farmers.

The little colony consists of three principal and several smaller buildings. In the larger buildings are a lecture room, experimenting room, library, reading room, carpenters' workshop, dormitory and dining hall for the pupils, the rooms of the manager and employés. The smaller buildings consist of beehouses with differently constructed hives, and several storehouses for implements and pavilions. The whole is surrounded by a wire fencing and is planted with honey-producing trees, shrubs and flowers.

The following courses are held in the bee farm:—

(*a*) A two years' course for the training of workmen, who acquire complete dexterity also in the preparation of implements;

(*b*) A course of four weeks for teachers, priests and others of the well educated class;

(*c*) A course of four weeks for small farmers, gardeners, foresters, &c.

*XIV. THE FIRST HUNGARIAN SWINE FATTENING CO. IN KŐBÁNYA.**

This company was formed in 1869, with a ground capital of £41,000 under the name of "The First Hungarian Swine Fattening Company." The growth of the Kőbánya market and the development of its export is to a very great extent to be ascribed to this company. The company gives pig-styes at a nominal charge to the swine fattener or to the merchant, provides forage at a very low charge, and acts also as agent for the buying and selling of the pigs; it gives credit on the pigs that are deposited with it, but never enters into any business on its own account.

On February 1st, 1880, the State Sanitary Board was established on the company's premises.

As regards fattening, young pigs of 15 months require six months for topping up. For the fattening of a couple of pigs about one ton of fodder is required. Since the establishment of the company, market reports have been furnished every week by it.

The following figures (on page 171) will show the return for a few years of the Kőbánya International Swine Market. In consequence of the swine fever which broke out in the year 1895, the trade in Kőbánya was very much thrown back; only of late years has it begun to thrive as formally.

*XV. VETERINARY COLLEGE IN BUDAPEST.**

Veterinary education in Hungary has a past of a hundred years. During the last half century great development in this branch has been made.

In 1782, was founded the first veterinary school in connection with the University with a course of 8 months and later of 12 months. In 1851, this course was lengthened by a year and the school was separated from the University.

In 1875, the course became a three years' one. Two examinations were necessary for a diploma, one in theoretical, one in practical subjects. This course was also found too short for the range of study and especially there was not enough opportunity for practical training.

Great improvement took place in 1880, when the school was transferred to the premises on which it to-day stands.

In 1890, the course was prolonged to four years, and opportunity given to the pupils of becoming acquainted with the veterinary police-system in the country and with practical cattle breeding in Gödöllő.

In 1899, the school was transformed into a college and since then only such students are accepted, who can produce a certificate of matriculation. Four examinations are necessary for a diploma. The method of instruction is very intensive and extends to every branch of veterinary science.

*XVI. ENTOMOLOGICAL STATION, BUDAPEST.**

When Hungary was first invaded by the phylloxera, the public did not know how to guard against this plague and so the *Phylloxera Experimental Station* was erected by the State in 1880. The question of the resistant American vine stock was also studied by this station and later it entered upon investigations on the various enemies of the grape.

In 1888, a plague of locusts appeared in Hungary; in this case also the work of extinction was entrusted to the Phylloxera Experimental Station.

As it became clear that the defence against phylloxera was as great a matter as viticulture itself, the viticulture division of the agricultural ministry made this matter its own, and the Phylloxera Experimental Station was made the *Entomological Station*.

Year.	Number of Pigs accepted.	Value of Pigs accepted.	Quantity in tons of Forage consumed.	Value of Forage consumed.	Number of Pigs disposed of		Value of Pigs disposed of	
					Altogether.	Abroad.	Altogether.	Abroad.
1870	588,860	£2,361,242	58,929	£345,833	550,540	361,960	£2,817,292	£1,003,096
1880	429,770	£1,510,820	51,278	£337,189	414,350	271,300	£1,983,049	£1,393,166
1890	605,796	£2,658,685	139,432	£768,989	521,401	276,711	£2,364,867	£1,316,258
1900	194,089	£786,268	37,641	£191,625	169,780	50,756	£825,632	£281,996

Since then the task of this station is to obtain and disseminate information regarding injurious insects. The station has voluntary correspondents in all parts of the country, who keep it informed on the damage done. It investigates insects sent to it in order to suggest appropriate remedies, and in case of necessity sends an expert to the scene of damage ; conducts investigations in economic entomology in different parts of the country, and makes trials for defence against injurious insects ; and mounts and arranges specimens for illustration and museum purposes.

The results of its experiments are published both in literary works and in popular pamphlets.

*XVII. GEOLOGICAL INSTITUTE IN BUDAPEST.**

This institute was founded in 1869 by the State. It makes detailed investigations into the geological formation of the soil and publishes the result of its researches in a manner adequate to the demands of science, agriculture, mining and industry in general.

During the 33 years, it has made a very rich collection of Hungarian minerals, stones and masonry.

For accommodating the collection and apparatus, a handsome building was erected in 1899 through the generosity of the State and of Dr. Andor Semsey, the Mecaenas of science.

*XVIII.—THE ENTAILED ESTATE OF FÓTH.**

The Fóth estate is at present in the hands of Count Alexander Károlyi, who inherited it from his father, Count Stephen Károlyi. The estate lies near Budapest, at a distance of about 8 or 9 kilometres from the populous neighbourhood of Ujpest and Rákospalota.

The climate of the estate may be said to be normal. The rainfall in this part is strongly affected by the Danube and a range of mountains beyond. This is so much the better for the crops, as the upper stratum of the soil consists of sand, which requires a good deal of moisture. Part of the estate is flat, the rest is rather hilly ; the topsoil is sand, and the subsoil is clay.

The estate comprises 8,413 acres, of which 823 is bare, 3,631 is arable, 111 is garden, 929 is meadow, 904 is pasture, 1,917 is forest, 96 is vineyard and 2 acres is reed-plot.

The management of this large estate is entrusted to the care of a steward and two assistant stewards. The following are employed besides :—a solicitor, a surveyor and a veterinary surgeon, a vine-dresser, 3 artisans, 8 foresters and overseers, 70 farm servants with a yearly contract. The employees and members of their families, in case of sickness, are attended by a physician and usually get drugs free of charge.

THE METHOD OF FARMING ON THE FÓTH ESTATE.

Both the soil and climate of the Fóth estate require a method of farming which keeps an even balance between the several grain crops. This can only be reached by following out the right proportions on the area given; 35 per cent. of the arable land is under forage crops; the estate has an additional tract of 929 acres of meadow ground; so the forage represents 48 per cent., as compared to the 52 per cent. of market produce. The position is further improved by the fact that a large part of the maize and oat crop is used for feeding the live stock.

Rye is the chief product of the estate; on a smaller scale are grown barley, oats and maize. The following proportions have, on an average, been adopted:—winter corn 30·5 per cent., summer corn 15 per cent., roots and green crops 16 per cent., forage 35 per cent.; fallow land has fallen to 3 per cent. As there is a great number of live stock, the chief forage crop is clover.

The farm manure amounts annually to 8,000 tons. This quantity is comparatively small, since the vineyard of 136 acres, one-third of which is manured every year, requires 20 tons of manure of first-rate quality per acre and so the offal of a slaughter-house and glue factory is used in addition.

LIVE STOCK AND TRACTIVE POWER OF THE ESTATE.

The breeding of farm stock and the growing of farm products on the estate are kept in even balance.

In consequence of the favourable situation of the estate dairy farming is the most profitable branch of live-stock breeding. Dairies that are situated at a distance from the town, have been obliged, owing to reduced prices, to discontinue their work. The stock of dairy cows consists of 240 to 250 head at present, and it is proposed this year to add 140 or 150 head more to this number. One of the new branches of dairy farming is to provide milk for infants. This branch will be under the supervision of a physician, a surgeon and a chemist. The cows selected for this end will be treated and inoculated according to the Koch-system. They are not to be milked when in calf and are fed on good, substantial fodder all the year round. The stables are to be entirely re-constructed. The milk, before being sent to the market will be sterilized. This preparation makes the casein more digestible and prevents the spread of maladies suspected. Of course this expensive way of supplying milk, together with all the investment necessary, must cause a rise in price.

The stock of dairy cows is bought chiefly from the south-west counties. Attention is paid to the health and good milking quality of dairy cattle. Only the best are bred. Those that are unable to supply nine pints of milk on an average per day are not kept for breeding. The average yield per head is 12 pints daily. One quart is sold, as a rule, for 1¾d.

Besides the dairy farm there is also a fine stock of coloured bullocks; every year 30 to 40 bullocks of one-and-a-half-year old are bought and placed in smaller farms far apart, in order to make a better use of pasture and to get a quantity of manure. They are reared in this way until they have completed their fourth year, when they are given to be fattened.

Annually 1,500 wethers are bought to make the best use of stubble fields, autumn pasture and also fodder of inferior quality, not to mention the quantity of manure gained as well. These are all sold in a well-kept condition after being shorn. These wethers yield a net profit of 3s. 4d. per head.

Formerly 200 to 240 oxen were fed for beef. This line of stock breeding paid well until a very recent date. The present rate of prices is, however, unsettled, and even prime meat sells at very low figures. Hence the feeding of oxen is discontinued and only a selected few will, henceforth, be fed for beef.

Horse breeding is no special branch on the estate; horses are only bred as a hobby of the owner. The Fóth stud was established by the late Count Stephen Károlyi, father of the owner, sixty years ago. The first stock came from England, consisting chiefly of hunters. This stock, with the exception of one or two mares, has been kept true to its pedigree, always being mated to pure-bred sires. The number of mares at times amounted to 50. National horse breeding has in the meantime risen to a high standard, through the influence of the Government; the small farmers have adopted the breeding of chargers and carriage horses to such an extent as to make it difficult for the big studs to furnish the same lot of horses, the prices being very much lowered in consequence of a vigorous competition. Therefore, studs of the larger type were obliged to limit their breeding stock to a considerably smaller number. The Fóth stud has at present 18 mares. All pure-breds reared on the estate are used as carriage horses.

The number of live stock in Fóth amounts to 74 horses, 673 cattle and 1,312 wethers. This number is quite in keeping with all the requirements of modern farming. The territory being 3,630 acres with a total live weight of 27,744 stones, 47 stones of live weight correspond to one acre.

A number of strong draft horses are kept for carting; the land is cultivated partly by home-bred oxen, partly by oxen brought from Transylvania. The number of teams are quite fit for the work of the estate and suit also the local conditions, there being a yoke of oxen to every 42 acres.

The feeding of the live stock is managed in a first-class manner. They are given more clover, grass, fodder and fresh maize during summer; the winter feed consists chiefly of various kinds of hay, of turnips, and of maize and bran and other dry stuffs.

The cultivation of the soil is performed on modern lines. A sandy soil requires to be ploughed in the autumn; this is rarely dispensed with. The stubble-field is ploughed in order to root out weeds, and all the operations prescribed by modern farming are done to keep the soil in a favourable condition. As hand labour is very dear, plots that are cultivated in this manner are let out in allotments for one third of yield. The mowing of forage is done by the estate hands in consequence of the large number of live stock. The crops are harvested by country people who undertake for a stated share all the work that is to be done, threshing included.

The total amount of farm produce per acre may on an average be stated as follows: market plants about 11 cwt., maize upwards of 11 cwt., turnips 167—207 cwt., artificial food as lucerne, clover and vetch 25 cwt., and the rest of grass fodder 17 cwt.

The unfertile sandhills of the estate have been transformed into woods. Large tracts of acacia are found. The wooded parts are divided into certain sections, and after the trees are felled in one part, the ground is hired out for two years free of charge. Those who accept these sections are expected to cultivate the plot in the usual manner, and to thin the coppice sprouting from the roots according to regulations.

There is on the estate a vineyard of 136 acres, planted chiefly on sandy soil. A certificated vinedresser attends to the vineyards. The vineyards are let out for cultivation at £2 18s. per acre. The metropolis being quite close, dessert-grapes can be sold at a reasonable price.

The farm buildings are all constructed by farm hands at private expense and the more recent ones are all of solid and thick material. The building of a square yard of stable costs 16s. 4½d. A square yard of a cottage for four servants and families costs 14s. 3d. Place for a cubic yard of dry fodder costs 7½d. which sum divided into 25 years gives the cost of one-fifth penny annually for the garnering of one cwt. of fodder.

The farm servants' quarters, from a hygienic and moral point of view, are well cared for. Each family has a separate room, pantry and loft extra, and a common kitchen for four.

The farm servants, according to recent statutes, have to be insured at the Workmen and Farm Servants' Insurance Fund against accident, old age, sickness and death; and the rates are paid by the owner. The wages of a servant on the farm amount to £16 13s. 4d. a year.

The estate being in the vicinity of the metropolis, the wages for hand labour per day are somewhat unfavourable. A man gets 10d. to 2s. 6d., a woman 6d. to 1s. 4d., and a youth 4d. to 8d. for a day's work.

The products of the estate are disposed of in large quantities on the premises, rarely are the cattle exported to Vienna in search of a higher price.

Farming machines and materials are bought through co-operative societies and from well-known Hungarian firms.

All the farm buildings and products are usually insured against fire; but the crops, with the exception of the more sensitive commercial plants, are, as a rule, not insured against hail, the plots being far apart.

Count Károlyi, the owner of the estate, takes care to support his employees in old age, after a long term of service, and orders about £1,000 to be paid out of his own treasury in grants and annual pensions. There are three schools on the estate, in which the farm servants' children are educated at the Count's cost, amounting, along with expenses of church patronage, to £500.

XIX. THE ROYAL HUNGARIAN CENTRAL MODEL WINE-CELLAR.

This is an institution created in 1881 by the Royal Hungarian Ministry of Agriculture, in order to promote the wine-growing industry of the country. For this purpose the institution has the following programme:—(1) It treats in a rational manner and makes fit for bottling all superior wines forwarded to it by the producers, in order to maintain and to exhibit the characteristic specialities of Hungarian wine-growing. (2) It opens to these wines larger markets especially in foreign countries by introducing them under the auspices of the Model-Wine-Cellar. (3) It gives information to Hungarian wine-growers, on application, upon the proper processes of cellarage, and affords the practical instruction required to the travelling teachers appointed by the Government.

Each wine-grower is entitled to send his products to these cellars. The minimum quantity of every special wine which must be sent to be treated apart being:—of table-wines 1,100 imperial gallons, of first-class table-wines and dessert-wines at least 440 gallons, of wines of picked grapes at least four "Göncz" casks. The samples, required previously from each of the consignments, are submitted in the Cellar to thorough analysis in order to test their alcoholic, acetic and tartaric percentage, the absence of obnoxious ingredients, etc. The cellarer has to keep a register of these samples containing the results of each analysis. The Board of Directors decides the admission of each consignment, after tasting the sample and after having consulted the cellarer.

The managers of the Central Cellar are prepared to bottle and to sell, at prices fixed by the Board, all wines produced in superior wine-districts which represent the superior specialities of the respective district, as well as wines of prominent grapes, which—although produced elsewhere—are worth being bottled and labelled with the names of the district and of the producer, if they are sent by owners who treat the wines of their own vineyards, or the wines of other producers with all necessary care, so that they are able to furnish continually wines of uniform high quality. These bottled wines bear the trade-mark of the Royal Hungarian Central Model-Wine-Cellar and if the price is at least 1s. per 1¼ pints, the bottles will be labelled with the name of the producer.

The Model-Wine-Cellar works under the superintendence of the Royal Hungarian Minister of Agriculture, represented by the Superintendent for wine-culture. The Cellar is managed, according to an agreement with the Ministry of Agriculture, by the "National Co-operative Society of Hungarian Winegrowers," a society of prominent landlords. The Chairman and the Board of this Society manage the Cellar in concurrence with the delegates of the exhibiting producers. The election of these delegates is submitted to the approval of the Minister of Agriculture.

The regulations of the Cellar being very rigorous in the selection of wines to be admitted, and the phylloxera having greatly reduced the production of wine in Hungary, the Central Model-Wine-Cellar has not yet been able to make great commercial achievements. The figures of the business are nevertheless considerable. The quantity of wine sold by the Institution between 1883 and 1900 amounts to 1,117,446 gallons worth £300,178, the average total price being 5s. 4d. per gallon, and the nett price 3s. 9d. The wine sold during the later years is smaller than formerly, the explanation being the competition of the foreign wines and also the difficulties of selling in foreign countries the stocks of our superior wines diminished by the ravages of the phylloxera.

The energetic reconstruction of the wineyards of this country makes such visible progress that we have every reason to hope that the task and the importance of this Institution in opening markets to our wines will grow from year to year.

The Royal Hungarian Ministry of Agriculture intends to reorganize the Institution by giving to it a larger basis and more business-like form. A great co-operative Society to be shortly founded will include growers of all the superior wine-districts of the country. Having to manage great quantities of wine, it will certainly be able to treat the products by wholly rational processes, and to furnish directly to the consumers the pure and genuine wines they may require.

This Society, which is to be constituted immediately, will continue, perhaps under another denomination but in the same spirit and with enlarged powers, the noble and useful task initiated by this Hungarian Central Model-Wine-Cellar.

The papers marked with an asterisk are reprinted from the "Guide of the party of English Agriculturists visiting Hungary in May and June, 1902," edited by the Royal Hungarian Minister of Agriculture.

Printed and published by JOHN DUTTON, Chelmsford. Price 2s. 6d. nett.
Illustrations by GARRATT & ATKINSON.

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KQ-392-974